

4-11-2017

A Mixed-methods Study of English Language Learners' Academic Achievements in a Spanish Language Immersion School

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A MIXED-METHODS STUDY OF ENGLISH LANGUAGE LEARNERS'
ACADEMIC ACHIEVEMENTS IN A SPANISH LANGUAGE IMMERSION SCHOOL

by

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A Dissertation Submitted to The Graduate School at the University of Missouri–St. Louis
in partial fulfillment of the requirements for the degree of Doctor of Philosophy
in Education with an emphasis in the Teaching and Learning Process

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ABSTRACT

English Language Learners (ELLs) represent the fastest growing population in the public-school community in the United States (U.S.), where their academic achievements lag behind their native English-speaking peers. English Language Learners' academic achievement gap has raised a challenging issue for U.S. educators. A convergent parallel mixed-methods study was conducted to 1) compare English Language learners' academic achievements (mathematics and English Language Arts [ELA] scores) to non-ELLs' academic achievements (mathematics and ELA scores) in a one-way Spanish immersion school in the Midwestern United States; 2) examine the impact of using Spanish as an instructional tool on English Language Learners' (ELLs) academic achievements who are admitted in a Midwestern Spanish language immersion school; 3) investigate how teachers perceive the effectiveness of Spanish language instruction on students' achievement and more specifically, ELLs; 4) assess the one-way immersion program's ability to assist ELLs' performance by using their first language and achieve better academic advancement compared to non-ELLs. The results of this convergent parallel mixed-methods study explained that there was no significant difference between ELLs and non-ELLs of mathematics and ELA scores. ELLs in a one-way immersion school perform similarly to their non-ELLs in measure of mathematics and ELA. Based on the results of this mixed-methods study, all teachers confirmed that it was an excellent idea to use ELLs' first language as an instructional tool. They insisted that L1 represented a great benefit for ELLs who learn through their L1. Also, ELLs can develop their first

language besides acquire English as a second language.

Keywords: English Language Learners, language immersion program, one-way immersion, academic achievement.

Dedication

In the name of Allah, the most Beneficent, the most Merciful

“O my lord! Advance me in knowledge” (Quran, 20:114).

To ALLAH, I dedicate this work to him, for his guidance, support, and thank you for everything.

I dedicated this dissertation to my husband, Adel Alidani, who helped me a great deal during this journey. Also, I dedicated this work to my four children: Hussain, Fatima, Muhammadali, and Ayatt. I love you all so much and thank you for your support and encouragement. You are the light of my life.

This dissertation is dedicated to my family, sisters, brothers, and uncle, Qassim Salman who always encouraged me to finish my doctoral degree.

Last but not least, I dedicated this work to my best friends: Yoli, Zahraa, Anwar, and Fatimah (Karen). Thanks to your encouragement and support.

Acknowledgements

I would like to thank all the people who helped me to achieve this great accomplishment.

I would like to express my thankfulness to my chair, Dr. Kim Song, for guiding me through this process. I am very grateful for her support and help.

Thank you to my committee members, Dr. Natalie Bolton, Dr. Lisa Dorner, and Dr. Ralph Cordova for supporting my studies.

Thank you to Dr. Alina Slapac and Dr. Carl Hoagland for their advisement and support.

Finally, I would like to acknowledge and thank you to the principal and teachers for letting me to conduct my study and making my research becomes true.

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List of Abbreviations

English Language Learners (ELL)

Native English Speakers (NES)

First Language (L1)

Second Language (L2)

English Language Arts (ELA)

No Child Left Behind (NCLB)

Every Student Succeeds Act (ESSA)

Analysis of Variance (ANOVA)

International Baccalaureate Organization (IBO)

Primary Years Programme (PYP)

Measures of Assessment Progress (MAP)

Northwest Evaluation Association (NWEA)

Common Underlying Proficiency (CUP)

Basic Interpersonal Communicative Skills (BICS)

Cognitive/Academic Language Proficiency (CALP)

Department of Elementary and Secondary Education (DESE)

CHAPTER ONE: INTRODUCTION

The U.S. Census Bureau showed that there was 148% increase in the number of people who spoke other languages than English between 1980 and 2009 (Shin & Ortman, 2011). Furthermore, the number of children, ages 5 to 17, whose native language was not English were 11.8 million in 2010 (Shin & Ortman, 2011). According to the National Center for Education Statistics (2016) study, the number of public school students in the U.S. who were English Language Learners (ELLs) was higher in school year 2012-2013 than in 2002–2003 and in 2011–2012. This may account for the increasing number of ELLs in the public schools, and this population is the fastest growing in the U.S. school community. Moreover, in 2015, ELLs' enrollment reached 10 million. One in every four public students will be an ELL by 2025 (National Clearinghouse, 2016). Several researchers have suggested that the number of ELLs will represent 40% of the students in the USA by the year 2030 (Thomas & Collier, 2001).

However, many immigrant students do not finish their education because they face problems that relate to the language, cultural backgrounds, and curriculum in the U.S. classrooms (Cummins, 1989; Krashen, 1999; Nieto, 2004). A number of educators consider these problems as chances to offer language immersion programs as an instructive choice in order to face the educational requirements of ELLs and native English-speaking students (Alanis & Rodriguez, 2008). On the other hand, many elementary schools in the U.S. are not taking advantage of chances to introduce other languages than English education to their students during the significant period of language acquisition (Partnership for 21st Century Skills, 2011).

Studies in elementary schools investigated the importance of instructional approaches that expected biliteracy and bilingualism (Partnership for 21st Century Skills, 2011).

Public education in the United States encourages English only in their curriculum, but since the 1960s a small number of the schools have adopted language immersion programs (Linton, 2004).

Language immersion is defined as the combination of content of language to the curriculum of immersion programs (Cammarata & Tedick, 2012). According to Lindholm-Leary (2001), language immersion is “a method of foreign language instruction in which the regular school curriculum is taught through the medium of a second language” (p. 27). One-way immersion programs afford an ‘additive bilingual’ setting so that the students develop the language they know (Lindholm-Leary, 2001). The language immersion programs do not only represent an additional way to educate ELLs, these programs also represent the pluralistic model that bilingualism is an important benefit for both native English-speaking students and native speakers of other languages (Alanis, 2000; Collier & Thomas, 2007; Freeman, Freeman, & Mercuri, 2005; Linton, 2004). Most of the language immersion programs support and use ELLs’ first language abilities by putting them in conditions to help native English-speaking students to become bilingual (Freeman et al., 2005; Linton, 2004).

In addition, according to Collier and Thomas (2004), “some language immersion programs in North America have developed as one-way programs provided for speakers

of one language” (p. 61). For instance, in Canada, language immersion schools offer instruction in both French and English to their students. Meanwhile, in the U.S., one-way immersion programs instruct native English-speaking students in other languages such as French and Spanish (Thomas & Collier, 2003). Additionally, one-way immersion programs in the U.S. are created for ELLs whose first language is still in the process of development, for instance, Spanish language (Thomas & Collier, 2003).

The one-way language immersion programs for ELLs can be found in demographic backgrounds where they do not have native English-speaking students in those schools (Thomas & Collier, 2003). “One-way immersion programs enroll linguistically homogeneous students who are typically dominant in the majority language and have no or minimal immersion language proficiency on program entry” (Tedick, Christian, & Fortune, 2011, p. 2).

Meanwhile, Lindholm-Leary (2001) explained that the two-way language immersion programs afford learning and content instruction by using two languages with the students who enrolled in these programs. The two-way language immersion program also assists with the acquisition of two languages and academic achievements as well as cross-cultural competences for all students (Lindholm-Leary, 2001). Also, many terms are used to describe dual language immersion programs, such as one-way dual language immersion, two-way school, two-way immersion programs, two-way bilingual education, developmental bilingual education, dual language education, bilingual immersion, double

immersion, and interlocking education (Baker, 2011; Collier & Thomas, 2007; Gomez, Freeman, & Freeman, 2005; Lindholm-Leary, 2012).

This convergent parallel mixed-methods study answered one null hypothesis and one research question about ELLs' first language used as an instructional tool and the impact using ELLs' first language had on their academic achievements. The null hypothesis was, H0: There is a statistically significant difference in mathematics and ELA mean scores on the MAP for ELLs and non-ELLs in a one-way Spanish immersion school. The research question was: How does instruction in the first language of English language learners, Spanish, impact on their academic learning in a Spanish one-way immersion school? This study compared ELLs' academic achievements (mathematics and ELA scores) to non-ELL peers in a one-way Spanish immersion school. In addition, this mixed-methods study explored how teachers perceive the effectiveness of Spanish language instruction on ELLs' academic achievements.

1.1 Background of the problem

ELLs' population has grown significantly in the public schools; these students are the fastest-growing and the lowest achieving compared to other groupings of students in the U.S. (Nieto, 2004; Whittenberg, 2011). According to the National Center for Education Statistics (NCES, 2016), Spanish was the mother language of nearly 3.8 million ELLs in 2013, which represented 76.5% of all ELL students and 7.7% of all public K–12 students. ELLs come to school with their first language development and home culture, therefore, they need a special program to assist them to achieve academically with support of their first language.

Since ELLs' academic performance falls behind their native English-speaking students, this causes a challenge for educators. Spanish-speaking students comprise one of the fastest growing groups within the school population, yet they represent the poorest of minority groups and are considered underachieving academically in U.S. schools (Hong & You, 2009; Nieto, 2009). Research conducted comparing ethnic groups on academic achievement discovered that Spanish-speaking and African-American students have lower academic achievement than Asian and Caucasian students (Hong & You, 2009). According to the National Assessment of Educational Progress (NAEP), Spanish students scored lower on mathematics and reading assessments compared with Caucasian students at elementary, middle, and high school levels (Vannenman, Hamilton, Anderson, & Rahman, 2009).

In another study, proficiency in the language of instruction is related to language minority students' skill to complete schoolwork and activities (Kuehn, 1996; Yang, 2005). Also, teachers' instructions have a great impact on ELLs' academic achievements when they use ELLs' first language as an instructional tool. Studies on schools in the U.S. show that "proficiency in the native language is a strong predictor of later English reading proficiency" (Hong & You, 2009, p. 236). U.S. schools need to afford a good program and support for ELLs' educational needs in order to help them succeed.

In addition, the other reason for this study was that my experience as an immigrant, an English teacher, and a second language speaker compelled me to research language immersion programs. I have a passion for mastering and teaching the English language. My aspiration to encourage children of my native country to be bilingual was

also of great interest to me. As an immigrant who has had many experiences with other immigrant families, I have witnessed various opinions and attitudes among immigrant families towards their children's language acquisition in this country. Some of these families want their children and extended families to learn English while others fail to see the benefit of learning English. Meanwhile, many adult immigrants do not learn English in order to communicate and are not involved with their children's schools or the community they live in. However, as a PhD student who would like to teach in higher education in this country, and as a mother, I found it an urgent need to learn English in order to ensure my academic success in the university and my active involvement as a parent for my children whose teachers are monolingual. Furthermore, I am also interested in maintaining and developing my native language, Arabic, for my children at the same time.

I am a founder of an Arabic school for immigrant families in a metropolitan area. The school began in 2008 as a summer school that operates three days a week for five hours a day. The curriculum is designed in order to develop reading skills in Arabic. I also teach Arabic language for non-natives.

Both programs have proven to be a successful experience because they have served many children. At the time of this study, there are approximately 100 students who are enrolled in the Arabic language school. Most of the children are from Iraq, Lebanon, and different Arabic countries. Moreover, with the increasing number of immigrants and refugees in the U.S., and specifically in this metropolitan area, many educators are forced to look for appropriate education and support.

As an educator, I consider language immersion programs a great opportunity for ELLs to keep their native language and learn the English language. Also, the language immersion programs help ELLs develop their native language proficiency and improve self-confidence.

As an English teacher, I taught English as a second language to immigrants and refugees in the Ritenour School District. Most of my students were Spanish speakers, though I also had students from Africa and Asia. I created an international food day for the school in order to bring food from different cultures and share it altogether. This event encouraged students who were from different backgrounds to share their thoughts and made them open to the other cultures. It made them feel more confident and that they were very welcomed to be a part of the U.S. community. In addition, it was a good experience that helped me to learn more about the immigrant families and their children in the U.S. public schools. All these events made me more interested and inspired to do this study regarding ELLs in the U.S. schools.

1.2 Purpose of Convergent Mixed-Methods Design

The design of a convergent parallel mixed-methods is the most popular of the basic and advanced mixed-methods strategies. In this approach, “a researcher collects both quantitative and qualitative data, analyzes them separately and then compares the results to see if the findings confirm or disconfirm each other” (Creswell, 2013, p. 269). In this method, both quantitative and qualitative data provide different types of information, such as qualitative views of participants, quantitative scores on instruments, and results produced from both should be the same (Creswell, 2013). Data collected in

this model should be the same or parallel variables, constructs, or concepts. For instance, if a concept of academic achievement is being measured quantitatively, it is gathered through a qualitative data collection process, such as in an open-ended interview (Creswell, 2013). One challenge in data analysis in a convergent mixed-methods design is how one should actually converge, or merge the data. There are some ways to merge the two data (quantitative & qualitative). The first way is called side-by-side comparison.

This study will report the quantitative statistical results and then discuss the qualitative findings, which either confirms or disconfirms the statistical results (Creswell, 2013). Mixed-methods researchers called this “a side by side approach because the researcher makes the comparison within a discussion, presenting the first set of findings and then the other” (Creswell, 2013, p. 273). The interpretation in the convergent approach is written into discussion section of this study, which contains a report comparing the results from the two databases and notes on whether there is convergence or divergence between the two sources of information (Creswell, 2013). As for validity in using the convergent approach, it should be based on establishing both quantitative and qualitative validity for each database. There are several threats to validity in using the convergent approach, such as unequal sample size, the use of different concepts or variables on both sides, both databases may be difficult to merge findings from both databases (Creswell, 2013).

The purpose of this convergent parallel mixed-methods study was to investigate of using Spanish as an instructional tool has impact on the Spanish ELLs’ academic achievements, who are enrolled in a Midwestern Spanish language immersion school.

This convergent parallel mixed-methods study examined the significance behind ELL students' academic achievements in mathematics and ELA. This study wanted to explore how a one-way language immersion program affected students' achievements, and understood how teachers perceived the effectiveness of the instructions by using ELLs' first language, Spanish, in the mathematics and ELA classes.

A large amount of research has been conducted on language immersion schools in different regions in the U.S., such as in the Northeast and Southwest (Thomas & Collier, 2001), but there is no much data on Missouri language immersion program outcomes in the Midwest area. I am interested in language immersion programs; therefore, in this study, I would like to explore the immersion programs in a metropolitan area in the Midwestern United States.

1.3 Research Questions:

This convergent parallel mixed-methods study's main research question: How does Spanish instruction impact ELLs' achievement in a one-way language immersion school using ELL and non-ELL students' mathematics and ELA MAP mean scores and teachers' interview data?

The quantitative research question for the study included: Is there a statistically significance difference in MAP ELA and mathematics mean scores for ELL and non-ELL students instructed in Spanish? The independent variables included ELLs and non-ELLs, and dependent variables included the mathematics and ELA scores.

The qualitative research question for the study included: How do interviews with teachers describe instruction to support ELLs' academic learning in a one-way immersion school?

In order to answer these questions, a convergent parallel mixed-methods study was used, which was beneficial to explain the ultimate of quantitative and qualitative methods (Creswell, 2013). Additionally, a mixed-methods design presented a more complete understanding of a study than either approach alone (Creswell, 2013). This convergent parallel mixed-methods design study compared and analyzed English language learners' academic achievements in mathematics and English Language Arts (ELA) in a one-way language immersion school with their non-ELL peers. The goal of the comparison between ELLs and non-ELLs was to investigate how the immersion school served English language learners (ELL) regarding their use of their first language (L1) for the class instruction.

Furthermore, it was a good opportunity to explore their academic achievement. A one-way ANOVA test used to analyze the mean scores of the ELLs' and non-ELLs' mathematics and ELA scores. ANOVA test is normally used to determine if data from different groups have common means or not (Barnes, 2012). ANOVA helps the groups to divided the overall population into subpopulation or "test groups" (Barnes, 2012) and then tests against the null hypothesis that the subpopulation all have the same average value of the dependent variable (Barnes, 2012).

Additionally, this convergent parallel mixed-methods study interviewed third, fourth, and fifth grade teachers. This study used a semi-structured interview (See

Appendix C). The interview focused on the teachers' instructions, the advantage of using ELLs' first language as an instructional tool, and the students' academic achievements.

1.4 Theoretical Framework

1.4.1. Bilingual Education in the United States.

The U.S. is a multilingual country; 20% of the U.S. population speaks a language at home that is not English (Bialystok, Craik, & Luk, 2012). By 2050, the Hispanic population will represent 24% of the general population, and the Asian-American population will represent 10% of the population (Lindholm-Leary, 2005). Bilingualism does not represent a recent phenomenon; it has existed since the U.S. was established (Crawford, 2004). There were 20 languages spoken in the U.S., including German, French, Dutch, and several native-American languages (Baker, 2011; Crawford, 1989).

The term "bilingual education" is often used to refer to programs designed for language minority students (Baker, 2011). In addition, in 1664 at least 18 languages were spoken on Manhattan Island, and most of the working and educated people were bilingual. During the 1700s, bilingualism was quite common, and by the mid-1800s bilingual schools in different languages operated across the U.S.: German-English schools in 12 states, French-English schools in Louisiana, and Spanish-English schools in the Territory of New Mexico (Baker, 2011). Moreover, in 1900, greater than 4% of the elementary school population received instruction partially or totally in the German language. In the early 1900s, with the threat of war against Germany, Theodore Roosevelt led a campaign against bilingualism, giving immigrants five years to learn English or be deported (Baker, 2011). Additionally, one of the founding fathers of the

U.S., Benjamin Franklin, disapproved Germans' preference for their first language, German instead of English, the typical language of the United States (Potwoski, 2007).

In 1967, Ralph Yarborough, who was a Texas senator, presented a Bilingual Education Act that was known as the "amendment of the 1965 Elementary and Secondary Education Act" (Baker, 2011, p. 187). In the beginning, this regulation was for Spanish ELLs who did not succeed in the school system. Then, this law was extended to involve all ELLs in U.S. schools (Baker, 2011).

In 1974, the Supreme Court ruled in the case of *Lau v. Nichols* on behalf of Chinese children who raised an equal claim that was under Title VI (Dorner, 2004). More than 1,000 Chinese-speaking students did not get enough educational support from their schools in San Francisco. Therefore, their parents raised this claim in order to get an assistance from the schools. Title VI ruled to use ELLs' first language in order to help them learn and acquire the English language. The Supreme Court ruled that "there is no equality of treatment merely by providing students with the same facilities, textbooks, teachers and curriculum; for students who do not understand English are effectively foreclosed from any meaningful education" (Baker, 2011, p. 187).

1.4.2. English Language Learners' academic achievement

The language immersion program is the most efficient method for elementary and secondary schools in order to make students progress to a high level of academic achievement in two languages (Collier & Thomas, 2004). According to the National

Center for Education Statistics (2010), there is an academic achievement gap between native English-speaking students and ELLs in the public school, which has remained unchanged for the previous 20y years. ELLs in elementary and secondary schools continue to score over 20 points lower than their native English-speaking peers in both mathematics and reading.

Many immigrant students leave school without finishing their education because they have problems related to the language, cultural settings, and curriculum in U.S. classrooms (Cummins, 1989; Crawford, 2004; Krashen, 1999). As a result, these children present a challenge for U.S. educators to investigate and find effective methods of educating students who speak a language other than English as their first language (Learning Disabilities Online Glossary, 2015). Furthermore, some educators look at these challenges as opportunities to present a language immersion program as an educational choice for the ELLs' and native English-speaking students' needs (Alanis & Rodriguez, 2008). According to Thomas and Collier (2004), language immersion programs closed the academic achievement gap in first and second languages.

Alanis (2000) explained that one way to deal with the needs of ELLs is to adopt language immersion programs. A language immersion program is an instructional language model that has been used to address the learning and teaching to support students who do not speak English as their first language (Baker, 2011; Christian & Genesee, 2001; Lessow-Hurley, 2009; Ovando, 2003). ELLs can facilitate success in school by using their native and target languages in the classrooms for instruction and

learning. They also can benefit from language immersion programs by developing their native language as they are acquiring English (Alanis, 2000).

The federal program, No Child Left Behind Act (NCLB) of 2001, was signed by President George W. Bush on June 8, 2002 (Baker, 2011; Thomas & Collier, 2003). NCLB needed choices about the best educational programs for ELLs and to close the achievement gap (Baker, 2011; Thomas & Collier, 2003). It attempted to assist ELLs by providing funding and resources in order to make them achieve academically, and be proficient in grade-level mathematics and reading (Baker, 2011). However, this legislation focused on ELLs and did not refer to students as bilingual (Baker, 2011). NCLB did not help ELLs to achieve academically, and after two years, NCLB failed to meet its goals (Crawford, 2004).

In December 2015, President Barack Obama signed Every Student Succeeds Act (ESSA) in order to improve the education system. Every Student Succeeds Act replaced No Child Left Behind (NCLB) (Executive Office of the President, 2015). According to the ESSA Act, “the accountability for English language learners moves from Title III (the English language acquisition section of the ESEA) to Title I (where everyone else’s accountability is)” (Klein, 2016). In addition, under this law, states can include ELLs’ test scores after they spent one year in the U.S. Through the first year, ELLs’ test scores would not be credited toward a school’s evaluation, but they have to take both of the assessments. In the second year in the country (U.S.), the states have to include ELLs’ result for reading and mathematics by using some determined type of development. In the following year, the competence results will be treated like any other students’ (Every

Student Succeeds Act, 2016).

1.4.3. Cummins' Common Underlying Proficiency Model (CUP)

Cummins' (1980) common underlying proficiency model of bilingualism described that when a person communicates two languages, these two languages represent the basis of thought and bilingualism. Both thought and bilingualism are likely because human beings have the skill to keep two or more languages. Cummins (1980) suggested that using the first language of ELLs in the schools can help ELLs to communicate with parents and grandparents and increase their linguistic proficiency. A first language enhances the intellectual and academic resources of individual bilingual students (Cummins, 2000).

Also, Cummins (1980) explained the common underlying proficiency (CUP) with a figure of two distinct icebergs that are combined at the base. Additionally, Cummins (2000) simplified the difference between the two types of language, Basic Interpersonal Communicative Skills (BICS) and Cognitive/Academic Language Proficiency (CALP). BISC was explained as a playground language or social interaction; for instance, a playground language was when students interacted with each other (Baker, 2011; Cummins, 1984). According to Cummins (1984) and Haynes (2007), the ELLs' social language skills can be developed in six months to two years after coming to the United States. ELLs become proficient in Basic Interpersonal Communication years before becoming proficient in cognitive academic language. CALP refers to the official educational language that includes listening, speaking, reading, and writing (Haynes, 2007).

Furthermore, translanguaging is “the act performed by bilinguals of accessing different linguistic features mode of what are described as autonomous languages, in order to maximize communicative potential” (Garcia, 2009, p. 140). The term ‘translanguaging’ was created by Cen Williams in order to plan to use two languages inside the same lesson (Baker, 2011).

Translanguaging means the social language practices of people who speak two languages (Garcia, 2013). It makes people understand the different visual, audio, written and linguistics around them; also, it gives students a chance to understand their multilingual linguistic environments (Garcia, 2009). For instance, students use translanguaging in order to facilitate comprehensions and rebuild meaning. For example, when a Spanish-speaking fourth grade student in a bilingual class was asked to write an essay in English, she wrote very basic English sentences. However, when the teacher gave her a choice to write her essay in Spanish, she included new English words and within five months, she wrote a complete essay in fluent English (Garcia, 2009).

Moreover, thresholds theory illustrated the relationship between cognition and level of bilingualism (Baker, 2011). Thresholds theory was recommended by Cummins in 1976 and Toukomaa and Skutnabb-Kangas in 1977 (as cited in Baker, 2011). Cummins, Toukomaa, and Skutnabb-Kangas argued that the study on cognition and bilingualism was demonstrated by the idea of the two thresholds; each threshold stands for a level of language competence that had significance for a child (Baker, 2011). The first threshold stood for a level that the child reached to prevent the negative values of bilingualism, and the second threshold was a level that required a knowledge of positive benefits from

bilingualism (Baker, 2011). The threshold theory had been characterized as a home with three floors and two linguistic ladders (L1 and L2) on each side (Baker, 2011). Threshold theory showed the relationship between the first language and the second language, and the significant role of the first language.

Besides, in 1997, Collier and Thomas presented the prism model that relates the educational accomplishment in a second language setting and to other social theories such as Cummins' theories and interdependence of students' first language and second language (as cited in Thomas & Collier, 2003). All in all, these theories used to support the theoretical portion of this mixed-methods study. Cummins' CALP and BISC theories explained the significant role of the ELLs' first language and how their first language affected their academic achievement in the school.

1.5 Significance of the study

This convergent parallel mixed-methods study was significant because numerous studies have shown the significance of the academic achievement of English language learners and native English-speaking students in language immersion programs (Collier & Thomas, 2004; Howard & Christian, 2002; Lindholm-Leary, 2005). However, this convergent parallel mixed-methods study requested to enhance the current frame of data on the impact of one-way language immersion programs on English language learners' academic achievements in mathematics and English Language Arts.

This convergent parallel mixed-methods research investigated ELLs' academic performance by comparing ELLs' mathematics and ELA MAP scores with non-ELL peers in a one-way language immersion school. This study had a hypothetical importance

in that it investigated Spanish language as an instructional tool, which is the first language of Spanish ELLs and how it benefits their academic success.

This convergent parallel mixed-methods study had significance for superintendents, federal lawmakers, and the Department of Education in the United States. It was very important that administrators confirmed that schools provided a complete and great characteristic education. Language immersion schools are a very important choice because they are competent to advance second language learning with precise content standards and high expectations (Alanis & Rodriguez, 2008).

1.6 Limitations

The results of this convergent parallel mixed-methods study may not be generalizable to the ELLs in other school districts, in the region, or ELLs in other regions because of the sample population of ELLs in this one-way immersion school. Also, this result may not be generalizable to ELLs in English-only schools. However, I shared the analysis report with the school administration and teachers since it was related to their students' achievement scores, their learning process in one-way immersion schools, and teachers' instructions.

1.7 Delimitations

This convergent parallel mixed-methods study was delimited to the school and school-district. The result of this study gave a strong insight about ELLs and their first language in a one-way immersion program. The result of this study could be shared with

the other immersion schools in this area, such as the French-English and Chinese-English schools.

1.8 Definitions of Key Terms

To ensure a clear comprehension of the key terms that used through this convergent parallel mixed-methods study, the following terms are described because they are related to this research.

Bilingual Education – “refers to education in more than one language, often encompassing more than two languages” (Garcia, 2009, p. 3).

Dual Language (or Two Way) – “typically occurs when approximately equal numbers of language minority and language majority students are in the same classroom and both languages are used for instruction” (Baker, 2011, p. 222).

English Language Learner (ELL): “an active learner of the English language who may benefit from various types of language support programs. This term is used mainly in the U.S. to describe K–12 students” (National Council of Teachers of English, 2008, p. 2).

First Language (L1): Is “the native language or mother tongue, often abbreviated as L1” (National Council of Teachers of English, 2008, p. 5).

MAP Tests: “are based on a continuum of skills in Mathematics and Reading from low skill levels to high skill levels. MAP assessments help teachers identify the instructional level of the student and provide context for determining where each student is performing in relation to local or state standards and national norms. MAP reports allow teachers to

better target instruction based on students' strengths and needs". (Measures of Academic Progress, 2016, para. 5)

One-Way Immersion: "Used frequently in the Southwestern United States to refer to developmental bilingual education; also frequently used to refer to foreign language immersion (to contrast it with two-way immersion that enrolls students from two language groups)" (Center for Applied Linguistics, 2016, para. 22).

Two-Way Immersion: "tries to integrate equal numbers of students from two different language groups, for example, native English and native Spanish speakers" (Dorner, 2016, para. 3).

1.9.Summary

In this chapter, the researcher presented a framework for this study. The researcher focused on English language learners' academic achievements in a one-way language immersion school. In the next chapter, a literature review provided a look into language immersion programs, the benefits of implementing this type of program, including academic achievement. The next chapter presented the theories and studies that supported language immersion programs in a Midwestern area.

CHAPTER TWO: REVIEW OF THE LITERATURE

This chapter involved the study of a language immersion program that uses English language learners' first language as the language of instruction to discuss a school-based language immersion program in a metropolitan area in the United States. This chapter reviewed the impact of ELLs' first language in language immersion schools and examined studies and theories that support the benefits of language immersion programs, for example the academic achievements of English Language Learners (ELLs), who enrolled in a one-way language immersion program and their cognitive progress. Lastly, this chapter concluded with an explanation the challenges of language immersion programs.

2.1. English Language Learners' First Language (L1) as an Instruction Tool

Researchers have demonstrated a significant role of the first language and its use in instruction and learning (Cummins, 1998; Garcia, 2000; Reese, Garnier, Gallimore, & Goldenberg, 2000; Thomas & Collier, 2001). ELLs will benefit from using their first language as an instructional tool (Li, 2012). Additionally, research studies have explained that immersion students achieve high levels of proficiency in the target language (Tedick et al., 2011). Ghorbani (2011), in his study, explained that the research in the last decade argued that "first language has a role in the second or foreign classroom discourse" (p. 1654). In addition, Stern (as cited in Ghorbani, 2011), discovered that the advantage of first language is considered a normal "psychological process" in linguistic growth.

Additionally, there is a positive and effective use of first language (L1) in different immersion programs and contexts (Liebscher, 2014). The use of L1 in the

classroom can be a clear function to support learning, and L1 could be a useful and necessary tool in this process of becoming multilingual in language immersion programs (Liebscher, 2014).

Salmona (2014) studied the position of native language in the second language classroom setting; her research took place at a Colombian international school that had an English immersion language class for the kindergarten students. These students received all classes in English. Salmona explained that the role of the first language (L1) was more beneficial at specific phases of development. She stated that “if students do not have good strategies in their language, they will not have good strategies to transfer to the new language” (Salmona, 2014, p. 53). Furthermore, Salmona (2014) realized that when students used their first language, they were more engaged in the activity and their level of participation was higher. Salmona also noticed that the lesson ran in an easier and positive way.

Additionally, studies indicated that children who start school with higher perceptions in their mother language can acquire another language more simply (Salmona, 2014). The research explained that there was an association between first language abilities and second language acquisition; for instance, a student who had greater abilities in his/her first language achieved better reading in English than students who had poorer reading abilities in their native language at the beginning of the school year (Salmona, 2014).

Another study showed English language literacy development was related to important features of ELLs' first language literacy progress in English (Genesee, Lindholm-Leary, Saunders, & Christian, 2006). The English Language Learners' linguistic progress remained beneficial for educational success in another language (Genesee et al., 2006). First language growth allowed a definite impact on ELLs' English advancement (Spaulding et al., 2004). ELLs can develop their reading skills better when they were educated in their first language and English from the beginning of the school year (Slavin & Cheung, 2003). The success of immersion language programs for raising students' reading skills has been guided by Slavin and Cheung. They realized that when learners were taught to read by using their mother language and English, they accomplished improvement more than their peers in English-only classrooms on examinations of reading attainment (Slavin & Cheung, 2003).

Cummins (as cited in Amrein & Pena, 2000) recommended that "allowing students to access curriculum using their native language results in their experiencing greater academic success and in students acquiring improved cognitive abilities" (p. 2). Moreover, Cummins (1979) explained that when students can acquire higher order thinking skills in their first language, they obtain them in a second language as well.

Additionally, Collier and Thomas (2004), Cummins (1996, 1997), and Lessow-Hurley (2009) believe that students who do not speak English can benefit from instruction in their native language (L1). For instance, during the first few years, the objective is to offer 90% of the subjects taught in Spanish and 10% in English. The 90:10 type places a primary importance on the minority language since this language is less

supported by the broader society. Consequently, educational practices of this language are less learned outside of school (Collier & Thomas, 2004).

In addition, Cade's (1997) study explained the designing, growth, and applying of the ELLs' first language in education in the Kansas City, Missouri, Public School District. Cade showed that the ELLs improved their test scores after they used ELLs' first language as an instructional tool, and they were able to think more critically and understand their academic content better in their first language. In the same year, Armstrong and Rogers (1997) investigated third-grade students who received a Spanish class three times a week for one semester, and they revealed that children in Spanish courses achieved significantly better than the students who did not receive Spanish education in mathematics and English Language Arts (ELA) on the Metropolitan Achievement Test (MAT).

A one-way language immersion program positions a significant emphasis on developing students' understanding of cultural practices and perspectives for a particular native group and may withhold the introduction of English until the upper elementary grades or later (Wilson & Kamana, 2001). The first French early total immersion classroom in Canada in the 1970s offered all subject matter instruction in students' second language, French (Fortune & Tedick, 2008). Second language education at elementary schools in the United States most frequently happens within one-way language immersion schools. Currently, the Center for Applied Linguistics (2011) lists 448 language immersion programs, including 22 diverse languages, with Spanish being taught at 45% of all schools.

To examine the literature review on the influence of instructional plans on ELLs' educational success, there are two current meta-analytic studies (Rolstad, Mahoney, & Glass, 2005; Slavin & Cheung, 2003). Both of these studies determined that language immersion programs developed in additional explicit results in comparison to all English or English immersion programs. Rolstad et al. (2005) found that the impact of language immersion programs was very significant in terms of ELLs' academic achievements, especially when delivered in their native language.

Wenglinsky (2000) showed that characters associated to class's exercise had the strongest influence on middle school mathematics success. Also, research described that the helpful communication between teachers and students is a significant instructional purpose; for instance, when teachers use encouraging social and instructional communications with ELLs, these students achieve better academically (Howard, Sugarman, Christian, Lindholm-Leary, & Rogers, 2007).

According to Broner and Tedick (2011), there were studies conducted in the 1990s in order to investigate "when and why children attending early and total immersion programs used L1 contexts demanding L2 use" (p. 167). Moreover, research by Broner and Tedick (2011) and Fortune (2001) focused on fifth grade learners' language and explored L1 and L2 use (as cited in Broner & Tedick, 2011). These studies explored that students were likely to use Spanish for 'on-task' interaction and English for 'off-task' interaction, especially when they are socializing (Broner & Tedick, 2011). Fortune (2001) discovered that when first language (L1) was used in a one-way program with Spanish-dominant learners, all children used Spanish approximately only a third of the time

during the Spanish instructional time. It explained that children who used their first language as classroom instruction achieved more than having only English in the instruction.

Broner and Tedick (2011) explored the social and linguistic features impacting forms of language use of students in a one-way immersion school. Their research answered this question “what languages (English/Spanish) do students use in peer-peer and student-teacher interaction?” (p. 168). The findings of their study were that students used Spanish more than English in Spanish instructional time (Broner & Tedick, 2011).

Furthermore, Huang and Rau (2007) studied language use by kindergarteners who were enrolled in an English immersion program in Taiwan, and they found that “language use was significantly affected by factors such as interlocutor, gender, social networks, context and teacher and parents’ attitudes” (p. 167). As a result, ELLs enhanced their education in their mother tongue language as well as in English (Baker, 2011). Similarly, native English-speaking students made ‘age relevant’ development in their native language and in all content areas of the curriculum (Baker, 2011; Lindholm-Leary & Genesee, 2010).

In addition, scholars in literacy, second language acquisition, together with professors, instructors, and legislators have captured an importance in the immersion language programs because these kinds of programs motivate academic achievement for both ELLs and native English-speaking students (Gomez et al., 2005). ELLs who do not make any achievement in different kinds of English as a Second Language and Transitional Bilingual Education programs have created excellent advances in language

immersion programs (Gomez et al., 2005).

2.2 Language Immersion Programs

Language immersion is not a recent technique used by foreign language schools. Since the 19th century, language immersion education has existed, although several consider it as a recent occurrence (Crawford, 2007). Language immersion programs were first present in the USA in 1971 as a method to integrate second language education into public elementary schools. In addition, language immersion programs have regularly increased across the country and are considered by educators and parents as an actual method of teaching a second language to children (Curtain & Dahlberg, 2004). Also, the main goal of immersion language programs is for students to enhance skills in the target language beyond English, and to develop improved cultural knowledge at the same time as accomplishing an extraordinary level of educational success (Fortune & Tedick, 2003).

Tedick et al. (2011) “have adopted the term of dual language education to describe programs that adhere to the principles of additive bilingualism, biliteracy, and cultural pluralism” (p. 1). Additive means when students learn a second language besides their first language (Baker, 2011; Cummins, 2000). Also, Cummins (2000) mentioned that “there are close to 150 empirical studies carried out during the past 30 years so that have reported a positive association between additive bilingualism and students, linguistic, cognitive, or academic growth” (p. 37). The three immersion programs, which are one-way, two-way, and indigenous language immersion, include three out of four types of dual language programs (Tedick et al., 2011). The fourth type is developmental

bilingual education, which has the same characteristics of one-way language immersion (Tedick et al., 2011; Fortune & Tedick, 2008). One-way language immersion is described as “demographic contexts where only one language group is being schooled through their two languages” (Thomas & Collier, 2004, p. 2), such as the United States-Mexican border schools, the United States-Canadian school, and American-Indian (native American) schools (Thomas & Collier, 2004). Alternatively, two-way language immersion promotes the mastering of two languages and the acquisition of language fluency and academic proficiency in all subject areas in both target languages (Baker, 2011). Indigenous language immersion means that students use more than one language on a daily basis. The developmental type means students can receive instruction in English and a second language in order to help students to achieve competence in both languages (Office of the Federal Register, 1987).

Lindholm-Leary (1997) described language immersion as “a marriage of bilingual education for language minority children and immersion education for language majority children” (p. 271). One-way and two-way language immersion programs are similarly focused on the language and educational progress of both ELLs and native English-speaking students (Lindholm- Leary, 1997). The majority of language immersion programs in the United States is Spanish/English, and the other language immersion programs are Mandarin/English, French/English, Korean/English, and Navajo/English (Howard & Sugarman, 2001; Potwoski, 2004). Additionally, California has the most of the language immersion programs: 11 charter schools and 22 magnet schools (Howard & Sugarman, 2001).

Gomez et al. (2005) suggested that language immersion programs have strengthened the view and importance of languages other than English in several communities across the U.S. In some communities, the language immersion programs have lessened tensions between groups who speak different languages (Gomez et al., 2005). These programs have helped to develop cross-cultural schools, communities, and cross-cultural friendship among students and parents. The important value of the other languages gives more confidence to the non-English speakers about their mother languages. Also, when native English-speaking students become bilingual, both parents and students realize the importance of knowing more than one language beside their academic achievements (Gomez et al., 2005).

A language immersion program has many goals such as extreme levels of skill in students' first and a second language, particularly reading and writing at grade level in both languages (Alanis & Rodriguez, 2008; Baker, 2011; Dorner, 2016; Gort, 2008; Howard & Christian, 2002; Lindholm-Leary, 2000, 2012). Academic achievement at or above grade level is an important goal of one-way language immersion programs, particularly in mathematics, science, and social studies. The other goal is to foster positive intercultural attitudes and behaviors, with communities and society benefiting from having citizens who are bilingual and whose attitudes are positive towards people of different cultural backgrounds (Baker, 2011; Howard & Christian, 2002; Lindholm-Leary, 2000, 2012). Briefly, the most important goals of the language immersion programs in the U.S. are for students to improve great levels of oral language skills and literacy in both English and an immersion language, achieve academic attainment at or

above grade level when measured in both languages, and manipulate positive attitudes towards school and themselves (Lindholm-Leary, 2005).

2.3 The History of Language Immersion

The language immersion program is a “type of bilingual education in which a second language is used along with the students’ first language for curriculum” (Genesee, 1984, p. 32). One-way language immersion programs started in Quebec, Canada in the 1960s as a response to French speakers arguing that their children had the right to be schooled in their native language (Baker, 2011; Cummins & Swain, 1986; Fortune & Tedick, 2008; Genesee & Jared, 2008; Krashen, 1999; Lambert & Tucker, 1972; Ovando & Collier, 1998; Peritz, 2006). The parents founded a new French immersion program in order to involve the French language in their society (Lambert & Tucker, 1972).

The work of Lambert (1984) on bilingualism and biculturalism had an important influence on teaching and society in the United States and around the world. In addition, Lambert (1984) saw the potential for language immersion programs to address the loss of language and wrote about “counteracting language neglect” (p. 21), as he studied attitudes towards home language maintenance in immigrant populations, including Polish-Americans, Arab-Americans, and Albanian–Americans in Detroit, Michigan. All in all, Lambert played an important role in the spread of immersion education to the U.S. As a result, the first two 20th-century experiments with language immersion programs in the United States and Canada in the early 1960s came about as a result of parental pressure. Both of these experiments were enrichment models. In Canada, English-speaking parents who wanted their children to develop a greater proficiency in both

French and English initiated what became known as an “immersion education”.

Immersion is a commitment to language immersion schooling throughout grades K–12 in which students are instructed 90% of the school day during K-1 in the minority language (French) chosen for the program, and 10% of the day in the majority language (English).

The hands-on nature of academic work in the early grades is a natural vehicle for proficiency development of the minority language (Thomas & Collier, 1997). The first language immersion school in the United States appeared in 1963 at the Coral Way Elementary School in Miami (Baker, 2011; Crawford, 1999; Ovando, 2003). The school taught a second language to two different monolingual-speaking student groups concurrently (Crawford, 1999).

In brief, in the U.S., one-way language immersion programs exist in 18 different languages including the more commonly taught languages, for instance, Spanish, French, and German. The less regularly taught are Arabic, Mandarin, and Russian (Fortune & Tedick, 2008). Lenker and Rhodes (2007) informed recognition of 310 one-way foreign language immersion programs spread across 33 states and 83 school districts (Fortune & Tedick, 2008). Currently immersion programs serving native students in the U.S. are designated as one-way immersion language or two-way immersion programs depending on the make-up of their students’ population (Fortune & Tedick, 2008).

2.5 The Benefits of Language Immersion Programs

This part of the mixed-methods study explained the main benefits of the language immersion programs. According to Baker (2011), one-way language immersion programs benefit for both majority and minority language students; Tucker (as cited in Baker, 2011) described that both language majority and minority students have the opportunity to develop academically, socially, and cognitively through them.

2.5.1 Academic Achievement

The academic achievements of ELL students in language immersion programs have been a main concern of educators, parents, and policymakers; therefore, much of the research on language immersion programs have focused on the academic outcomes of students (Howard, Sugarman, & Christian, 2003). There are three longitudinal, large scale, and comparative studies conducted by Lindholm-Leary in 2001 and Thomas and Collier in 1997 and 2002 (Howard et al., 2003). These studies dealt with students' outcomes by standardized measures of oral language, literacy, and academic performance in the content areas (Howard et al., 2003; Potwoski, 2004). Lindholm-Leary and Genesee (2014) discussed the relationship between L1 competency and students' outcomes. They explained that evaluation of immersion programs in Canada and the U.S. have shown that “students often score grade significantly lower than non-immersion students in English (their L1) during the primary grades when all or most the instruction is in the L2, on tests of reading and writing in English” (p. 166). These evaluations determined that there was no academic gap in speaking and listening understanding (Lindholm-Leary & Genesee, 2014).

However, not all the researchers reported such differences and gaps that have been reported disappear within one year of reviewing instruction in English (Lindholm-Leary & Genesee, 2014). Additionally, research in Canada on one-way immersions showed that students develop the similar levels of proficiency in English as non-immersion students, regardless of when the instruction in L1 starts and how much teaching students get in the L1 (Lindholm-Leary & Genesee, 2014). Additionally, in the other research conducted on academic outcomes in immersion programs and English-only instruction, students demonstrated that immersion students achieved the same level of competence as students in mainstream programs in mathematics, science, history, and other subjects (Essama, 2007; Genesee, 2004; Genesee & Lindholm-Leary, 2013; Jones, 2005; Lindholm-Leary, 2001; Lindholm-Leary & Howard, 2008).

Thomas and Collier (1997) analyzed 700,000 student records to monitor long-term educational outcomes of ELLs in five school districts for five years. They had examined records of students in different program types such as the ESL pull out, ESL content, transitional education, one-way immersion, and two-way language immersion. They discovered that one-way immersion programs showed success above the grade level. In contrast, ELLs in the other programs were unable to close the gap with native English-speaking (NES) students by the end of high school (Howard et al., 2003). In a later report, Thomas and Collier (2002) noted from their 1996-2001 study that only 90:10 and 50:50 models of one-way and two-way language immersion programs allowed language minority students to reach the 50th percentile on standardized tests on all subjects in both languages (Howard et al., 2003; Thomas & Collier, 2002).

In another research study, Lindholm- Leary (2001) explained that students in language immersion programs perform at or above grade level on standardized reading and mathematics tests in English, they scored similarly their statewide peers by about grade 5-7. ELLs closed the achievement gap with native English-speaking (NES) students in English-only classroom by fifth grade; and they achieve at or above grade level in reading and mathematics tests measured in the partner language (Lindholm-Leary, 2005, 2012). Although most of these studies have focused on Spanish-English dual language immersion, the results extend to studies of Chinese and Korean dual language immersion students (Lindholm-Leary, 2012). In addition, dual language immersion programs are successful at the secondary level (Lindholm-Leary, 2012). Most of language immersion students “were rated as proficient in their two languages, effectively by the upper elementary grade levels, and students made excellent progress in both languages across the grade levels in both 90:10 and 50:50 models of language immersion programs” (Lindholm-Leary, 2012, p. 258).

In conclusion, one-way immersion language programs’ main goal is to “create highly proficient immersion language speakers who better understand and appreciate cultural diversity in their community” (Fortune & Tedick, 2008, p. 24). All the immersion branches (one-way, two-way, developmental, and indigenous) develop language proficiency in more than one language while positively supporting academic achievement over time (Fortune & Tedick, 2008).

2.5.2 Cognitive Development

Cummins' (1979, 1980, 1998, 2007) Underlying Proficiency model of bilingualism theory, suggested the idea of a Common Underlying Proficiency (CUP) to describe the relationship between development of cognitive and academic skills of ELLs' first language and their development in the second language (English). This theory suggested that languages share underlying manifestations and that gains in one language lead to gains in the second language. This theory gives a level of confidence in bilingual programming, indicating that they function as enrichment models, providing students with unique opportunities to develop literacies in two languages. CUP refers to the underlying relationship between language and thought, Cummins (1979, 1980, 1998, 2007) illustrates Common Underlying Proficiency with an image of two separate icebergs, which are joined at the base. Figure 2.1 shows the relationship between the two languages (L1 & L2).

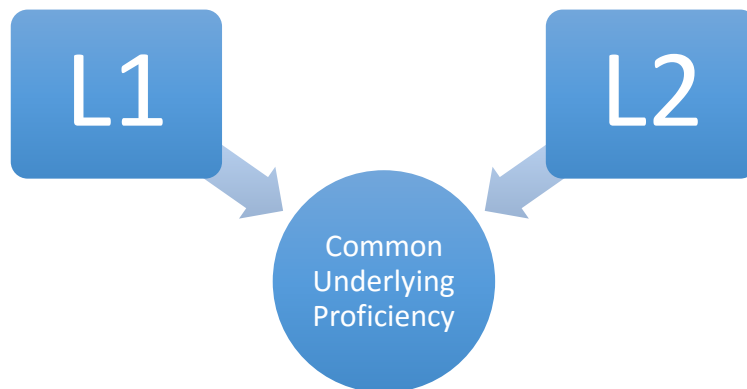


Figure 2.1 *The relationship between L1 and L2*

Cummins (2000) explained the difference between two types of language, Basic Interpersonal Communicative Skills (BICS) and Cognitive/Academic Language Proficiency (CALP). BICS is described as a playground language or social English (Cummins, 1984). In addition, BICS is a language for social interaction, for instance, playground language is when students interact with each other (Baker, 2011). According to Cummins (1984) and Haynes (2007), the ELLs' social language skills can be developed in six months to two years after their arrival in the United States. ELLs become proficient in basic interpersonal communication years before becoming proficient in cognitive academic language. CALP refers to formal academic learning, which includes listening, speaking, reading, and writing (Haynes, 2007).

The Thresholds theory explains the relationship between cognition and level of bilingualism (Baker, 2011). The Thresholds theory was proposed by Cummins in 1976 and Toukomaa and Skutnabb-Kangas in 1977 (Baker, 2011). Cummins, Toukomaa, and Skutnabb-Kangas argued that the research on cognition and bilingualism was illustrated by idea of the two thresholds; each threshold represents a level of language competence that has consequences for a child (Baker, 2011). The first threshold represented a level that the child reached to prevent the negative consequences of bilingualism while the second threshold was a level that was required for a child to experience the positive benefits of bilingualism (Baker, 2011). The Threshold theory has been represented as a house with three floors and two linguistic ladders (L1 and L2) on each side (Baker, 2011). It argues that students with high levels of proficiency in two languages (top level)

are the most cognitively advantaged learners (Baker, 2011). Figure 2.2. shows the relationship between L1, L2, and bilingualism.

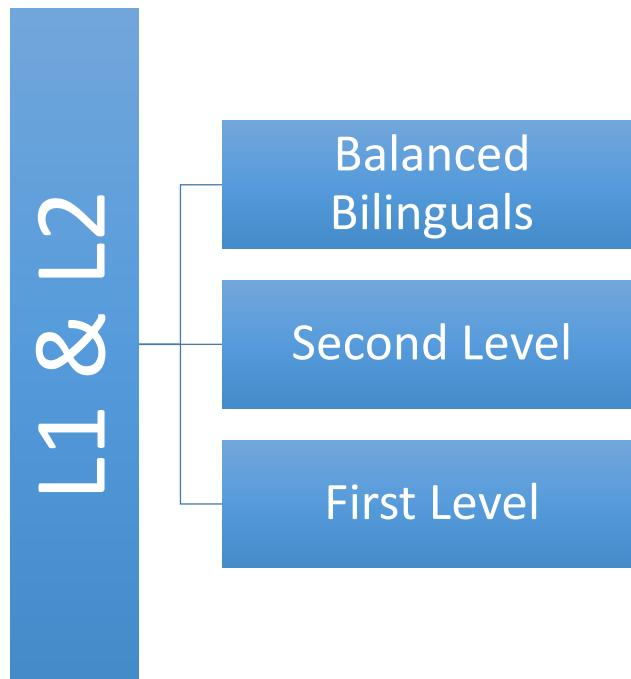


Figure 2.2 *The relationship among L1, L2, and bilingualism*

Thomas and Collier (2011) maintained that home is the essential context for cognitive development because when children use their parents' language from birth to age 12, the children are getting "nonstop cognitive development". In addition, Thomas and Collier (2011) explained that parents are a great source for the motivation of thinking skills by asking questions, discussing daily activities, cooking, shopping, and telling stories. They showed that when parents are talking with their children by using parents' native language, it helps children to grow cognitively. However, when parents speak English to their children at home, and English language is not the language in which they

are cognitively developed, the children's cognitive development is slowed down (Thomas & Collier, 2011). Studies showed that those children who did not speak/use their parents' first language before the age of 12 may experience cognitive slowdown; meanwhile the children who use their first language may acquire more cognitive skills (Thomas & Collier, 2011).

According to Collier and Thomas (2007), the Prism Model is defined as “major developmental processes that children experience during their school years that need to be supported at school for language acquisition and learning to take place” (p. 333). This model can be used for ELLs and native English-speaking students. In addition, it can be used to close the academic achievements gap in second language. The Prism Model contains four major elements, which are sociocultural, linguistic, academic, and cognitive processes. Learning a second language requires formal language education in an academic setting and interactions with the second language outside of the classroom. It needs strategies and methodologies which assist with second language learning and teaching the four language skills (reading, writing, listening, and speaking). Figure 2.3 showed the academic, social, and cognitive processes for L1 and L2.

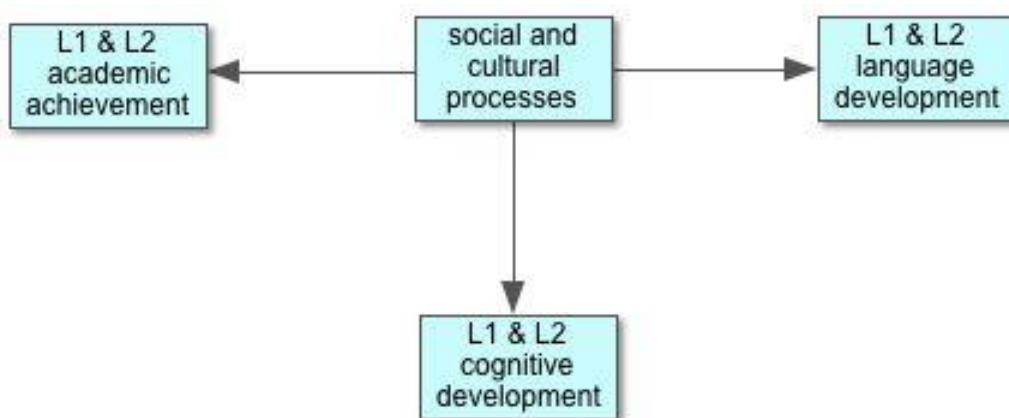


Figure 2.3. *Concept map for social, cognitive, and academic processes of L1 and L2*
(Adapted from Thomas and Collier, 2007)

2.6 Teachers Quality and Bilingual Education

Teachers in language education, like those in mainstream classrooms, should have high levels of knowledge of the subject matter, curriculum, technology, instructional strategies, and assessment. In addition, they need to reflect on their teaching. These teachers' features have been linked to better student outcomes (Howard et al., 2007). Teachers working with second language learners must consider their learners' linguistic, cultural, and academic needs, as well as the levels of proficiency. Teachers should encourage their students to experiment with language.

However, teachers need to develop their skills and approaches for integration language in their content instruction (Tedick et al., 2011). A recent study discovered that “immersion teachers may not understand the interdependence between academic learning and language learning, and they have a difficulty identifying language that should be taught and knowing how to teach language effectively as they teach content” (Tedick et al, 2011, p. 7). Immersion teachers should have access to the necessary professional development to become more “language-aware” (Hoare, 2001, p. 196). Teachers of language must know about the language they are teaching (Andrews, 2007). Teachers should make purposeful assignments, which builds in both content and language, for instance, clear language and content objectives for particular tasks (Tedick et al., 2011). Teachers may design tasks to bring students' attention to form and encourage their

reflection on language. “Life in language immersion classrooms is highly complex, and student language use involves a multitude of variables” (Tedick et al., 2011, p. 183).

In addition, Tarone and Swain’s (1995) suggestion that immersion classrooms can become diglossic, explained that L2 and L1 are not only affected by academic and social interaction but by teaching pedagogy. Researchers indicated that “one-way language immersion design feature facilitate teachers’ ability to make appropriate modifications to their immersion language use and instructional practices for increased comprehensibility among learners” (Fortune & Tedick, 2008, p. 18).

Teachers of culturally and linguistically diverse students could use their students’ first language and experiences as a good source in the classroom. This was known as funds of knowledge, it was established by Gonzalez, Moll, and Amanti in order to develop the research to discover ELLs families’ funds of knowledge (FOK). FOK contained capabilities, abilities, beliefs, and experiences of students and their families (Williams, Tunks, Gonzalez-Carriedo, Faulkenberry, & Middlemiss, 2016). In language immersion program settings,

ELLs were able to demonstrate greater comprehension of English texts than when they were only assessed in English. They also demonstrated that, by focusing on authentic communication on topics relevant to student communities, rather than on rote practice of basic writing mechanics, students can produce much more sophisticated texts in English than was evident from standardized assessments. (David, 2016, p. 7).

Moll (2015) discussed the importance of teacher's funds of knowledge, as he stated, “to understand how teachers’ experiences, live experiences, interact with the academic knowledge and pedagogical knowledge and concepts they are supposed to master as professional educators” (para. 3). Teachers need to integrate the instructional knowledge with their funds of knowledge in order to become outstanding teachers.

Consequently, hiring quality bilingual teachers is necessary in immersion programs (Scanlan & Zehrbach, 2010). The teachers of immersion language classrooms need to understand the theories of immersion and bilingualism (Alanis & Rodriguez, 2008). Effective bilingual teachers can recognize the immersion programs as additive models and they can balance the language learning with the academic goals. In addition, they may foster high expectations for their learners and employ culturally sensitive pedagogy (Alanis & Rodriguez, 2008).

In this convergent parallel mixed-methods study, all MLIS (a pseudonym) teachers are required to be “Highly Qualified” (MLIS, 2016). According to the academic requirements, MLIS teachers demonstrate a commitment to the success of all their students and families. They should be native or near-native speakers of their language instruction, and be experienced teachers of early childhood or elementary education (MLIS school, 2016). Additionally, MLIS must provide at least 1,044 hours of instruction per year (MLIS school, 2016). Approximately 77% of teachers are Spanish native speakers, but proficient in English, and 13% are English native speakers of whom only 30% speak Spanish (Galve, 2016). In addition, in MLIS, the language instruction is 80% Spanish and 20% English (ELA class) (MLIS school, 2016). Besides ELA class, the

ELLs received ESL support about 90 minutes a week in order to continue growing academically in English (MLIS school, 2016).

2.7 Challenges in Language Immersion Programs

There are significant challenges that affect the quality of language immersion programs, such as how well the language immersion program is designed and implemented (Lindholm-Leary, 2012). These include design, accountability, curriculum, and instruction as related to biliteracy and bilingual language development (Lindholm-Leary, 2012). Moreover, a primary challenge related to the language immersion concerns “the allocation of time given to each language” (Lindholm-Leary, 2012, p. 258).

For language immersion, this difficulty is having enough time for their participants to demonstrate grade-level competence (Lindholm-Leary, 2012). In addition, language immersion programs face difficulties on how they can develop high levels of proficiency in two languages. Research showed that “effective programs utilize a number of approaches that can help promote higher levels of bilingualism” (Lindholm-Leary, 2012, p. 261). Language immersion programs have become very well-known due to the reliable research that has documented its success in promoting bilingual language proficiency and academic achievements of both ELL and NES students from a variety of language, ethnic, and socio-economic backgrounds (Baker, 2011; Dorner, 2016; Lindholm-Leary, 2012).

Teachers in language immersion programs play an important role, so it is critical to find quality teachers for language immersion programs, and it is not easy to find bilingual teachers in the United States (Freeman et al., 2005). Research has been conducted on

language immersion program's academic achievements, but the research about the teachers in language immersion programs is still unknown (Freeman et al., 2005).

2.8. Summary

This chapter has reviewed studies that have been conducted on a one-way language immersion program type. In addition, it has described language immersion programs, uses ELLs' first language as an instructional tool, and explains the history of language immersion programs in the United States. This chapter has identified the benefits of language immersion programs for ELLs in the U.S. schools. Also, it has discussed the challenges that language immersion programs in U.S. schools face. In the next chapter, the researcher discusses the methodology of this study. The researcher will attempt to answer the hypothesis and research question by using ELLs' mathematics and ELA scores, and teachers' semi-structured interviews.

CHAPTER THREE: METHODOLOGY

This chapter illustrated the research methods used through this study. The purpose of the convergent parallel mixed-methods study investigated the impact of Spanish instruction on ELLs' academic achievements in a Spanish one-way language immersion school. The first part of this chapter explained the type of the research questions, research design, sampling, data collection, and the last section explained the data analysis.

3.1 Research Questions

The convergent parallel mixed-methods study's main question was: How does Spanish instruction impact ELLs' achievement in a one-way language immersion school using mathematics and ELA MAP mean scores for ELL and non-ELL students and teachers' interview data? The quantitative research question for the study included: Is there a statistically significance difference in MAP ELA and mathematics mean scores for ELL and non-ELL students instructed in Spanish? The quantitative portion of this mixed-methods study used the 2016 Missouri Assessment Program (MAP) data to compare and analyze ELLs' academic achievements to that of non-ELLs, who enrolled in a one-way language immersion school. The independent variables included ELLs and non-ELLs, and dependent variables included the mathematics and ELA scores. The qualitative research question for the study included: How do interviews with teachers of ELLs describe instruction to support ELLs' academic learning in a one-way immersion school? Answering overall research question for this convergent parallel mixed-methods study design gives a more accurate understanding of the research than using either method alone (Creswell, 2013).

3.4 Research Design

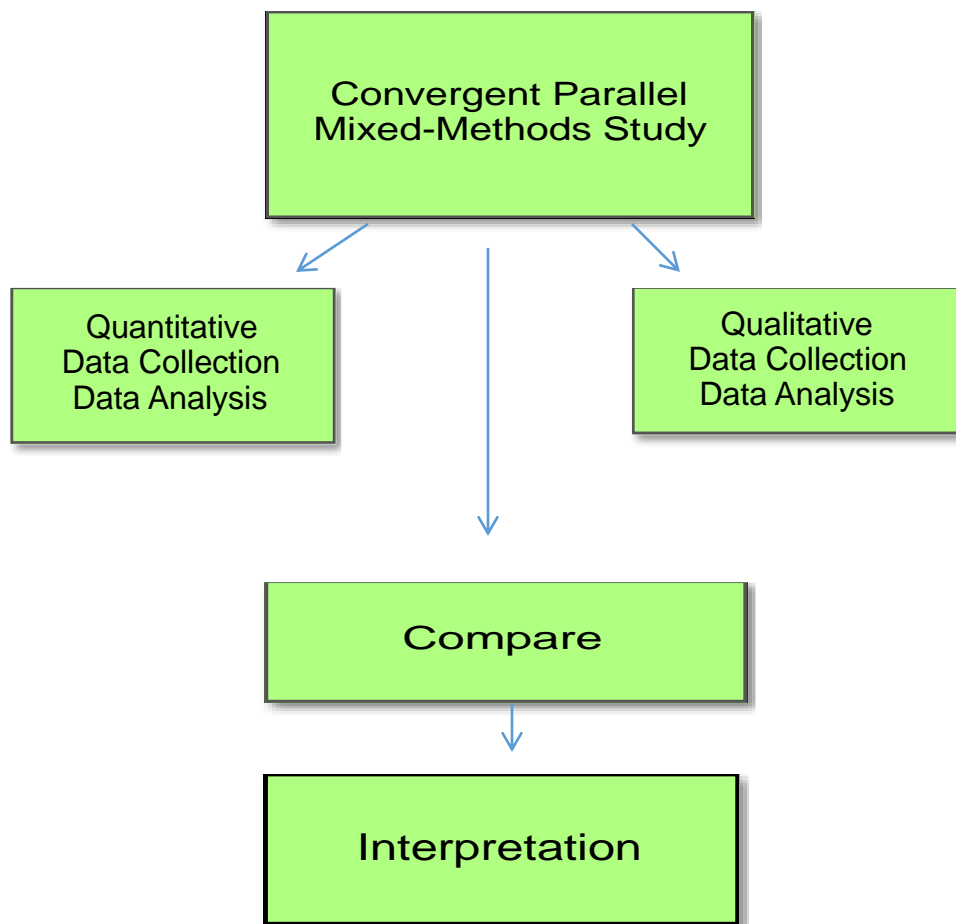
This study integrated both quantitative and qualitative methods using a mixed-methods research design. The research question determined the methods undertaken. Mixed-methods research required in conducting both quantitative and qualitative methods (Gay & Airasian, 2003). Specifically, a convergent parallel mixed-methods model was used in this study. In this model, the researcher merged qualitative and quantitative data in order to provide a complete analysis of the research problem (Creswell, 2013). In this model, the researcher “collects both forms of data at roughly the same time and then integrates the information in the interpretation of overall results” (Creswell, 2013, p. 15).

This convergent parallel mixed-methods study design had two parts: A quantitative method design using the mean MAP scores in order to see the significant differences between ELLs and non-ELLs in the areas of ELA and mathematics using Analysis of Variance test (ANOVA).

The second part of this convergent parallel mixed-methods study: A qualitative method design that had the semi-structured interviews, the qualitative method contained information about teachers’ views regarding of using ELLs’ first language as an instructional tool, benefit of using L1, and ELLs’ social language. After each interview, the researcher transcribed the entire interview into a word document. According to DeMarrais (2004), the interview is “a process in which researcher and participant engage in a conversation focused on questions related to a research study” (p. 55). Interviews with the participants were semi-structured because this provided for consistent

investigation of specific topics with the participant and basic introductory questions, but also afforded flexibility to engage in natural conversation that provided deeper insight.

Figure 3.1 showed a concept map of this convergent parallel mixed-methods study that collected and analyzed the quantitative and qualitative data. Both types of these data were collected and analyzed in chapter three, and they were compared and interpreted in chapter five.



Figur3.1: Concept Map of quantitative and qualitative data collected and analyzed

This research design was a convergent parallel mixed-methods study. Creswell (2013) indicated that mixed-methods study claimed, “pragmatic knowledge” through “collection of both quantitative and qualitative sequentially” (p. 21). A mixed-methods study was beneficial for this research because it took the best of both quantitative and qualitative methods (Creswell, 2013) to support the research questions. Quantitative and qualitative methods should be “thought of as complementary methods that, when taken together, provide broader options for investigating a range of important educational topics” (Gay & Airasian, 2003, p. 20).

A convergent parallel mixed-methods study was useful for the research since it described the effective of both quantitative and qualitative methods (Creswell,2003). The basic characteristics of the mixed- methods involved the design can be based on either or both perspectives, research problems can become research questions and, or hypotheses based on prior literature, sample sizes vary based on methods used, and data collection can involve any technique available to researchers (Creswell, 2003). The convergent parallel mixed-methods could be easy to describe and to report, useful when unexpected results arise from a prior study, helped generalize, helpful in designing and validating an instrument, and can position research in a transformative framework (Creswell, 2003).

This convergent parallel mixed-methods design represented the best well-known of the essential and progressive mixed-methods strategies. In this convergent parallel mixed-methods study, the researcher collected both quantitative and qualitative data, analyzed and compared them individually, and evaluated the outcomes to see if the

results approved or disapproved each other (Creswell, 2013). This kind of mixed-methods showed that both quantitative and qualitative data afforded diverse types of information, such as views of participants qualitatively and scores on instruments quantitatively, and both produced results that must be the similar (Creswell, 2013). A convergent strategy typically involved collecting data concurrently (Creswell, 2013).

To certify a reliable study, the researcher maintained records for all the interviews. During the entire research process, interviews, students' scores were anonymous and pseudonymous used for any demographic data to preserve confidence and privacy. The reliability means the consistency of a measure (Salkind, 2011). Internal consistency reliability is one of four types of reliability; "it is used when you want to know whether the items on a test are consistent with one another in that they represent one, and only one, dimension, construct, or area of interest" (Salkind, 2011, p. 110).

Maxwell (2005) defined validity as, a "goal rather than a product: it is never something that can be proven or taken for granted validity is also relative: it must be assessed in relationship to the purposes and circumstances of the research, rather than being a context-independent property of methods or conclusions" (p. 105).

Internal validity is defined as the level to which the researcher can determine that a relevant connection happens among two variables (Gay & Airasian, 2003). The internal validity is mainly related with the researcher's skill to control extraneous variables (Gay & Airasian, 2003). External validity, also called "ecological validity," is described as the level to which the study outcomes can be generalized to and through populations of

individuals, backgrounds, times, results, and treatment differences (Gay & Airasian, 2003).

The external validity assists researchers to clarify whether the treatment effects can be generalized to “subgroups of subjects and across different populations, time, or settings” (Engel & Schutt, 2013, p. 164). Factors that affect the internal validity are experimental mortality that refers to “the case in which participants drop out of a study” (Gay & Airasian, 2003, p. 361). In order to decrease this threat, researchers informally give subjects to treatments and by “making treatment equally desirable” (Gall, 2003, p. 372). In addition, the internal validity will be threatened if subjects drop out of the study, and when one group loses a larger number of subjects than other groups. However, in this case, the researchers must know the reason for this unequal loss or drop out (Gay & Airasian, 2003).

3.2 Setting

This convergent parallel mixed-methods study took place at a one-way language immersion charter school in a Midwestern United States. The school was known as the Midwestern Language Immersion School (MLIS), a pseudonym used in this study, is an urban public charter school. It has three elementary schools that teach Spanish, French, and Chinese. MLIS is authorized by the International Baccalaureate (IB) organization to offer the Primary Years Programme (PYP) and the Middle Years Programme (MYP) (International Baccalaureate Organization, 2016).

The International Baccalaureate Organization (IBO) recommended an international education source that improves the academic, emotional, private, and social

skills that help students to live and work in a worldwide (International Baccalaureate Organization, 2016). The IB framework “structures learning around six discipline concepts: who we are, where we are in place and time, how we express ourselves, how the world works, how we organized ourselves, and sharing the planet” (International Baccalaureate Organization, 2016, para # 1). Additionally, the IB framework provides schools with a broad plan for high quality and international education. This one-way immersion school (MLIS) uses the Primary Years Program (PYP) as a curriculum framework that designed for students aged 3 to 12. “By choosing to implement the PYP, schools will develop students’ academic, social and emotional wellbeing, focusing on international- mindedness and strong personal values” (International Baccalaureate Organization, 2016, para # 2).

The Primary Years Programme (PYP) provides schools with a comprehensive plan for high quality and international education. PYP prepares “schools with a curriculum framework of essential elements, such as, the knowledge, concepts, skills, attitudes, and action that young students need to equip them for successful lives, both now and in the future” (International Baccalaureate Organization, 2016, para #1).

Furthermore, the PYP purposes to create a curriculum that is engaging, applicable, stimulating and important for learners between ages 3-12. The PYP is prepared according to the written curriculum, the taught curriculum, and the assessed curriculum (International Baccalaureate Organization, 2016).

The IB learner profile represents 10 characteristics valued by IB world schools. These features can assist students with becoming responsible members of local and

global societies. The IB learners attempt to be “stable, righteous, thoughtful, open-minded, knowledgeable, and caring as well as thinkers, risk-takers, communicators, and inquiries” (International Baccalaureate Organization, 2016, para #1). The main goal of all IB programs is to “develop internationally minded people who recognizing their common humanity and shared guardianship of the planet, and help to create a better and more peaceful world” (International Baccalaureate Organization, 2016).

As mentioned earlier, this mixed-methods study took place at the MLIS school (pseudonym). This school had a diverse population that consisted of 400 students in 2016. The highest population was African-American, which represented 55.8%, the second population was White at 25.0%, and the third one was Hispanic, at 14.8%. Table 3.1 showed the students’ demographics. All core subjects were taught in Spanish, the first language of ELLs.

Table 3.1

MLIS School Demographics

MLIS School	2016
Black	55.8%
Hispanic	14.8%
White	25.0%
Total	400
N = 400	

This school, MLIS (pseudonym) is a Public Charter School (K-5) and it is open to all students in the urban area and to other students from the 13 county school districts. As a Public Charter School, MLIS' tuition is free and provides transportation for students within the city who live at least two miles from the schools. MLIS uses the International Baccalaureate curriculum to provide an accurate and global educational for its students (MLIS, 2016). MLIS is a Spanish/English language immersion school. This school provides 80% of instructional in Spanish and about 20% in English (Galve, 2016). Moreover, the number of the students who are eligible for free or reduced-price lunch is approximately 72.8% in 2016 (Department of Elementary and Secondary Education, 2016).

In this convergent parallel mixed-methods study, the researcher compared ELLs' mathematics and ELA scores with non-ELL peers in a one-way immersion language school. By interviewing six bilingual teachers, the researcher sought out if the language immersion program that uses the ELLs' first language increased ELLs' test scores. MLIS' teachers are bilinguals who have Bachelors and Masters in elementary education (MLIS, 2016). Most of them have high quality teaching experience (Galve, 2016).

As a result, other schools and districts may be more interested in the idea of implementing immersion language programs for students who speak only English and who speak another language. This mixed-methods study helped ELL teachers or teachers with ELLs to be more aware of the ELLs' educational needs. In addition, this study realized teachers' impact of using Spanish as an instructional tool on ELLs' academic

and social impact by investigating the interview data and analyzing the MAP scores in mathematics and ELA.

3.3 Sampling

Convergent parallel mixed-methods research involved abilities in managing both quantitative and qualitative approaches (Gay & Airasian, 2003). This convergent parallel mixed-methods study has two samples: quantitative sample and qualitative sample. The quantitative sample of this convergent parallel study consisted of 181 students of third, fourth, and fifth grades. I have chosen a convenient sample for this part of the study. This study used the students' 2016 MAP data on mathematics and ELA. The number of ELLs was 24 and the number of non-ELLs was 157. The variables of this quantitative data were ELLs, non-ELL students, mathematics scores, and ELA scores.

Table 3.2 and 3.3 showed the ELLs' and non-ELLs' sample with their ELA and mathematics scores.

Table 3.2

ELLs and non-ELLs' sample with their ELA scores

	N	ELA	Advanced	Proficient	Basic	Below Basic
ELL	24		1	7	14	2
Non-ELL	157		20	43	52	41

Table 3.3

ELLs and non-ELLs' sample with their mathematics scores

	N	Math	Advanced	Proficient	Basic	Below Basic
ELL	24		1	7	12	4
Non-ELL	157		17	38	54	48

The qualitative sample was a convenient sample that consisted of six bilingual teachers of third, fourth, and fifth grades. I chose those teachers because this study was analyzed ELL and non-ELL students' MAP scores of third, fourth, and fifth grades. They were interviewed at the school site. The interview was the main data collection strategy in qualitative research. Therefore, having strong data in an interview depended on well-chosen open questions from the researcher (Merriam, 2009) (Appendix C for the Interview Protocol).

Table 3.24

Demographic of Teachers' Interviewed (all names are pseudonyms)

Participants	Grade	Degree	Gender	Years of teaching
Sarah	4 th & 5 th grade ELA and ELL teacher	BA degree in Spanish with minor in Latin	F	19 yrs.

Tina	Third grade	BA in English teacher for elementary level.	F	2 yrs.
Adam	Fifth grade	BA degree in elementary teaching, and MA in education	M	6 yrs.
Megan	Third grade	BA degree in Spanish education	F	10 yrs.
Nora	Fourth grade	BA degree in Graphic design; master degree in international education	F	3 yrs.
Elizabeth	Fifth grade	BA in education	F	3yrs.
Total = 6				

3.5 Data Collection

Quantitative and qualitative data was collected for this study. I started the data collection process by first sending an email to the school principal in order to introduce myself as a researcher and made an appointment with her to explain my research interest.

In addition, I sent an approval letter to the principal of the school to ask for her permission to collect data from the teachers by interviewing them. The principal was contacted via email several times. Then the principal sent a letter of support for the research. When the UMSL Institutional Review Board (IRB) approved the research, I was ready to collect the data. For the qualitative data, I interviewed six elementary bilingual teachers of third, fourth, and fifth graders. The interview protocol consisted of two main themes: “Impact of using Spanish language when teaching ELLs”, which had a main question with two probing questions (Appendix C). The second theme of the interview was: “ELLs’ social language” (Appendix C) that had a main question with four other probing questions. This interview took approximately 30-40 minutes. The interview was face to face and it was a semi-structured. The interviews were recorded by using an iPad with the permission of the interviewees using the informed consent forms (Appendix A). The use of interview was a commonplace in qualitative research (Denzin & Lincoln, 2005; Merriam, 2009; Yin, 2003).

To confirm a reliability of this study, the researcher provided records for all the interviews. Through the whole research process, interviews, students’ scores were anonymous and pseudonymous used to reserve confidence and privacy. The first two interviews were done by the researcher and an instructor from a Midwestern university. Then, the researcher saved all the interviews in a safe file and no one had access to this file except the researcher. For this study, the researcher was responsible for creating interview protocol, collecting the data, analyzing the data using both descriptive measures, and coding techniques.

For the quantitative data, I collected mathematics and ELA scores of ELLs and non-ELL students in order to compare their academic achievements by analyzing their 2016 MAP test scores at the MILS school of in an urban district. The MAP test evaluates “students’ progress toward mastery of the Missouri Show-Me Standards” (Department of Elementary and Secondary Education, 2017, para # 1). Almost all students in grades 3-8 in Missouri must do the grade level assessment. English Language Arts and mathematics are managed in very grades. Science is managed in grades 5 and 8. According to the Department of Elementary and Secondary Education (DESE), “English Language Learners (ELL) who have been in the United States 12 cumulative months or fewer at the time of administration may be exempted from taking the English Language Arts portion. All other content areas must be assessed” (2017, para # 4). Grade-level assessments in mathematics and ELA include multiple item types. Those items are associated with the Missouri learning standards. The student’s performance on ELA and mathematics MAP is described in one of four stages of accomplishment: Below Basic, Basic, Proficient, or Advanced. The reliability of a test indicates to the constancy of measurement it affords. There are two kinds of reliability that are suggested in the improvement of the MAP.

The first is reliability across forms of the assessment. In other words, the assessment is reliable if a student would perform similarly on each of the three equivalent forms of a MAP subject area assessment.

A common test blueprint is used to ensure that the difficulty and length of each form of the assessments are similar. Statistical

equating procedures will be used to create reliable equivalent forms

(Nicastro, 2014, p. 17).

The students' measurement, English Language Arts and mathematics state testing outcomes were obtained from the MLIS school principal on November 16th, 2016, and was considered existing data. The researcher was committed to reporting the data accurately for the purpose of reviewing the questions posed in the study. Also, in order to ensure that the data was void of inadequate interpretation, the researcher entered data collection with no set outcome or assumptions.

3.6 Data Analysis

Data analysis is a complex process that involves moving back and forth between concrete bits of data and abstract concepts (Merriam, 2009, p. 176). In addition, Merriam (2009) showed that data analysis was the “process of making sense out of the data” (p. 175), and “the process of answering your research questions” (p. 176). After all qualitative (interview) data were coded, and categories and themes were determined, they were transferred to a qualitative codebook that included definitions for codes and a list of all codes, the codebook “evolved and changed during a study based on close analysis of the data” (Creswell, 2013, p. 199).

The quantitative data were analyzed by using IBM SPSS Statistics, and interpreted the data on answering the second research question. The variables in the quantitative data were the ELLs, and non-ELL students' mathematics scores and English Language Arts' scores. Mean and standard deviations (SD) for each test scores (descriptive statistics) and frequencies of the scores were reported. This convergent

parallel mixed-methods study ran multiple one-way Analysis of Variance (ANOVA) test to compare ELA and mathematics academic achievement mean scores between two different groups, ELLs and non-ELLs. The independent categorical grouping variables was ELLs and non-ELLs. Additionally, the continuous dependent variables were the mathematics and ELA mean scores. No control variables were used in the analysis.

Alternatively, the qualitative data (the interview) was analyzed according to the Grounded Theory that was developed by Glaser and Strauss in 1967 (Merriam, 2009). A grounded theory contains “categories, properties, and hypotheses that are conceptual links between and among the categories and properties” (Merriam, 2009, p. 199). The researcher reviewed the transcripts, highlighted the key words, and analyzed them to have several key codes. Then the researcher created the coding book that included the key codes, description, and sample experts. The researchers identified main themes by summarizing, interpreting, comparing, and categorizing the collected data and the researcher memos as Merriam (2009) indicated. The main themes in this study were using ELLs’ first language, Spanish as an instructional tool, teachers’ attitudes towards ELLs, and teachers’ funds of knowledge regarding their instructional teaching. The subcategories themes in this study were ELLs’ knowledge, ELLs’ background and experiences, student-teacher relationship, culture, differentiated education, family, proficiency, knowledge, confidence, and self-esteem.

Stake (1995) suggested that qualitative researchers interpret the data from the participants’ perspectives rather than allowing the researcher to draw conclusions and make assumptions. Therefore, the researcher collected two sources of data (quantitative

and qualitative). The researcher involved in an essential self-reflection about assumptions, biases, and her relationship to the study in order to prevent unethical practices and discover authentic themes and patterns from the data (Yin, 2009).

3.7 Limitations

The study used a convergent parallel mixed methods research design. The quantitative part was dependent on data that already existed, ELLs' and non-ELLs' mathematics and ELA mean MAP scores. Therefore, the results were applicable only to populations similar to that of this study. Also, the other limitation was the small sample size of ELLs compared to the non-ELLs' sample. The interview sample was six bilingual teachers and these interviews were not reflected to the other teachers from different districts. The interview data gave a broad insight about classrooms' instruction using ELLs' first language.

CHAPTER FOUR: RESULTS

Overview

The purpose of this convergent parallel mixed-methods investigated the impact of Spanish instruction on the Hispanic ELLs' academic achievements in a Spanish language immersion school. The convergent parallel mixed-methods study's main research question was: How does Spanish instruction impact ELLs achievement in a one-way immersion school using ELL and non-ELL students' mathematics and ELA MAP mean scores and teachers' interview data?

The quantitative research question for the study included: Is there a statistically significance difference in MAP ELA and mathematics mean scores for ELL and non-ELL students instructed in Spanish?

The independent variables included ELLs and non-ELLs, and dependent variables included the mathematics and ELA scores. The qualitative research question for the study included: How do interviews with teachers of ELLs describe instruction to support ELLs' academic learning in a one-way immersion school?

This convergent parallel mixed-methods study integrated quantitative and qualitative data. Quantitative data included the ELLs' mathematics and ELA MAP test scores. The first section of data analysis explained the descriptive statistics and results of the one-way ANOVA test. This test was used to determine if significant differences existed between ELL and non-ELL students mean scores on the MAP assessment who attended a one-way Spanish immersion school. Alternatively, qualitative data collection instruments included the teachers' semi-structured interviews. The question was

answered by interviewing six bilingual elementary teachers ($N = 6$). The results of the interviews will follow the quantitative results.

4.1 Result of the Quantitative Study

Descriptive Statistics

The result of the quantitative study was analyzed, is there a statistically significant difference in mathematics and ELA mean scores on the MAP for ELLs and non-ELLs in a one-way Spanish immersion school? A one-way ANOVA was used test this question. The independent variables included ELLs and non-ELLs, and dependent variables included the mathematics and ELA scores. The total number of participants in this part of the study ($N = 181$), and included third, fourth, and fifth grade students. Tables 4.1 and 4.3 reported the means and standard deviations for student's mathematics and ELA scores.

Table 4.1

The Mean and Standard Deviation for Mathematics between ELLs and Non-ELL Students

	Mean	SD	N
ELL	2.21	.779	24
Non-ELL	2.15	.959	157
Total			181

On the mathematics test, ELLs' mean scores were $M = 2.21$, $SD = .779$, and the mean scores of non-ELLs were $M = 2.15$, $SD = .959$.

Table 4.2

The Mean and Standard Deviation for English Language Arts between ELLs and Non-ELL Students

	Mean	SD	N
ELL	2.29	.690	24
Non-ELL	2.26	.995	157
Total			181

On the ELA test, the ELLs' mean scores were $M = 2.29$, $SD = .690$, and the non-ELLs mean scores were $M = 2.26$, $SD = .995$.

ANOVA

In this section, the analysis of variance (ANOVA) was used to test if statistically significant differences were present between ELLs and non-ELLs and their MAP ELA and mathematics mean scores. ANOVA was chosen over a t-test due to being a more powerful inferential test of statistical significance. The dependent variables were students' ELA and mathematics mean scores. Prior to running the ANOVAs, the Levene's test for Equality of Variances was used to test the assumption of homogeneity of variance. Levene's test used the level of significance set for ANOVA ($\alpha \geq .05$) to test the assumption of homogeneity of variance. Table 4.3 reported the result of the test Homogeneity of Variances between ELA and mathematics mean scores.

Table 4.3

Results of Homogeneity of Variance between ELA and Mathematics

Levene Statistic	df1	df2	Sig.
------------------	-----	-----	------

ELA score	7.068	1	179	.009
Math score	2.940	1	179	.088
Total	180			

For the ELA variable that showed above, the value for Levene's test (1,179) = 7.068 with a significant (p) value of .009. Because the significant value was less than our alpha of .05 ($p < .05$), the assumption of homogeneity of variance is not met. Levene's test results showed that this data did not meet of homogeneity therefore an ANOVA was inappropriate to run for ELA scores. For mathematics variables, the values for Levene's test was 2.940 with a significant (p) value of .088. This p value was greater than the alpha of .05 ($p > .05$). therefore, I concluded that there was not a significant difference between the two group's variances. The two groups have equal variances. The assumption of Homogeneity of Variance was met. Therefore, I moved forward to report the ANOVA test results with the mathematics test. Table 4.4 reported the result of ANOVA test between the ELL and Non-ELL on mathematics mean scores.

Table 4.4

Analysis of Variance (ANOVA) for Mathematic Students (ELL and Non-ELL)

	df	Mean Square	F	Sig.
Between groups	1	.080	.086	.770
Within Groups	179	.925		

The ANOVA results for the mathematics was not significant, $F(1, 179) = .086$, $p = .770$. Therefore, I concluded that there was no statistically significant differences on mathematics mean scores on the MAP for ELL compared to non-ELL students.

Since the number of the non-ELL students was larger than the ELLs (24 ELL and 157 non-ELL peers), I randomly sampled and compared an equal number ($n = 24$) non-ELLs with ELLs using stratified proportional sampling. I did this because I wanted to compare the same number of both ELLs and non-ELLs to try and equalize the groups. I used SPSS software to help me to choose a random sample from non-ELLs' data by using the random number generator. "Using randomization is the most reliable method of creating homogeneous treatment groups, without involving any potential biases or judgments" (Easton & McColl, 1997, para # 6). Using the random number generator in SPSS, an equal number of ELLs and non-ELLs according their MAP achievement levels were selected. Tables 4.5 and 4.6 showed the number of ELLs and non-ELLs according their MAP achievement levels prior to random selection. For non-ELLs' ELA scores, one advanced, seven proficient, 14 basic, and two below basic students were randomly selected.

Tables 4.5

ELLs and non-ELLs' sample with their ELA scores

	N	ELA	Advanced	Proficient	Basic	Below Basic
ELL	24		1	7	14	2
Non-ELL	157		20	43	52	41

Table 4.6

ELLs and non-ELLs' sample with their mathematics scores

	N	Math	Advanced	Proficient	Basic	Below Basic
ELL	24		1	7	12	4
Non-ELL	157		17	38	54	48

Table 4.7

The Mean and Standard Deviation for Mathematics and ELA Scores for ELLs and Randomly Selected Non-ELL Students

		Mean	SD	N
ELA Score	ELL	2.29	.690	24
	Non-ELL	2.29	.690	24

Math Score	ELL	2.21	.779
	Non-ELL	2.17	.816
Total			48

Table 4.6 showed the results the ELA test, the ELLs' mean scores were $M = 2.29$, $SD = .690$, and the randomly selected non-ELLs mean scores were $M = 2.29$, $SD = .690$ for equal size groups. On the mathematics test, ELLs' mean scores were $M = 2.21$, $SD = .779$, and the mean scores of randomly selected non-ELLs were $M = 2.19$, $SD = .816$ for equal size groups.

Prior to running the ANOVA test, I must check the assumptions of normality of the data. Levene's test was used to assess normality. Levene's test results showed that this data was normal as ANOVA is appropriate to run for ELA and mathematics scores. The significant value of the Levene's test must be greater than .05. Table 4.7 reported the result of the test Homogeneity of Variance between ELA and mathematics mean scores. Table 4.7 reported the result of the test Homogeneity of Variances between ELA and mathematics mean scores.

Table 4.7

Results of the Homogeneity of Variance for Mathematics

	Levene Statistic	Df1	Df2	Sig.
ELA score	.000	1	46	1.000
Math score	.040	1	46	.842

Total 47

For mathematics variable scores, the values for Levene's test was .040 with a significant (p) value of .842. This p value was greater than the alpha of .05 ($p \geq .05$); the assumption of Homogeneity of Variance was met. Statistical significance between the two groups and their mathematics scores can be determined using ANOVA.

For ELA variable scores, the value of Levene's test was not significant .000 with a p value was greater than of .05 ($p \geq .05$); therefore, the assumption of Homogeneity of Variance was met; therefore, an ANOVA was appropriate to run for ELA scores.

Table 4.8 reported the results of the Analysis of Variance (ANOVA) for ELA and Mathematics students (ELL and non-ELLs).

Table 4.8

Analysis of Variance (ANOVA) for ELA and Mathematics Students (ELL and Non-ELL)

		df	Mean Square	F	Sig.
ELA Score					
	Between Groups	1	.000	.000	1.000
	Within Groups	46	.476		
Math Score					
Groups	Between	1	.021	.033	.857
		46	.637		
	Within Groups				
Total		47			

Table 4.8 showed the results of the ANOVA test for equal size groups. The ANOVA test and ELA was not significant, $F(1,46) = .000, p = 1.000$; therefore, the results concluded that there was not statistically significant difference on the ELA mean scores (on the MAP for ELL compared to non-ELL students). Additionally, the ANOVA test and mathematics was not significant, $F(1,46) = .033, p = .857$; therefore, I concluded that there was no statistically significant difference on mathematics mean scores on the MAP for ELLs compared to non-ELL students.

4.2 Results of the Qualitative Study

The qualitative research question of the qualitative study of this convergent parallel mixed-methods study was: How do interviews with teachers of ELLs perceive instruction with ELLs' first language (Spanish) to support their academic achievement in a one-way immersion school? Interview data was analyzed to examine this research question. Six bilingual teachers (names are all pseudonyms) were interviewed after they completed the informed consent form (Appendix A).

Ms. Sarah is a white female ELL and ELA fourth and fifth grade co-teacher. She speaks English and Spanish. She has 19 years of teaching experience that includes seven years at MLIS school. Also, she has a BA degree in Spanish with a minor in Latin studies and business, bilingual elementary teaching certificate from the state of California, teaching certificates in California, Colorado, and Idaho, four certifications in Missouri in early childhood education, K-12, Spanish, and TESOL. She had 54 Spanish ELLs at the time of this research.

Ms. Tina is a female third grade teacher from Puerto Rico. She has 11 years of teaching experience, with nine years in Puerto Rico and two years in the USA; she taught English to native Spanish-speaking students in Puerto Rico, but at MLIS school, she teaches Spanish language to native English speaking students besides ELLs. She has a BA in English education for the elementary level. She had two ELLs in her class at the time of this research.

Mr. Adam is a fifth-grade male teacher from Spain. He speaks English and Spanish with six years of teaching experience, four years in MLIS school, and two years in Spain as an English teacher. Mr. Adam has a Bachelor of Arts (B. A.) degree in elementary teaching and a Master of Arts (M. A.) in education. There were eight ELLs in his class with different language proficiency levels at this time of this study.

Ms. Megan is a female third grade teacher from Puerto Rico. She speaks English and Spanish. She has a B. A. degree in Spanish education, a certificate to teach K-3 graders, and a certificate to teach Spanish to K-12 graders. She has 10 years of teaching experience that includes seven years at MLIS school. Ms. Megan has one ELL in her class.

Ms. Nora is a female fourth teacher from Venezuela. She speaks English and Spanish. She has three years of teaching experience at MLIS school. She has a BA in Graphic Design, and she is pursuing a master's degree in international education and a Missouri teaching certificate. Ms. Nora has nine ELLs in her class.

Ms. Elizabeth is a female fifth grade teacher from Honduras. She speaks English just like Native-English speakers besides her first language, Spanish. Ms. Elizabeth has

three years of teaching experience at MLIS school. She has a B. A. in K-6 elementary education from a Midwestern state university.

Semi-structured interviews were conducted with each teacher for this study. The semi-structured interview is the best standard interview, which is “guided by a set of questions and issues to be explored, but neither the exact wording nor the order of questions is predetermined” (Merriam, 2009, p. 114). The interview ranged from 30 to 45 minutes for each participant. The researcher and an assistant research professor interviewed the first two participants, then the researcher interviewed the other fourth participants at their school using the semi-structured interview protocol (Appendix C).

According to Patton (2002), the main goal of the interviews is “to obtain a special kind of information. The researcher wants to find out what is in and on someone else’s mind” (p. 341). The main idea of this interview was to explore what the interviewed teachers perceived to be the impact of using Spanish language when teaching ELLs and ELLs’ social language for their academic achievement. The interview questions were (1) “How does using Spanish in your instructional tool benefit Spanish-speaking ELLs’ academic achievement in mathematics and ELA?” (Appendix C) and (2) “How does using Spanish as the language of instruction impact ELL’s social language and social competency?” (Appendix C). Both two main interview questions had several probing sub-questions.

All six semi-structured interviews were recorded using an iPad, and transcribed into word documents. Data analysis started with open-coding and moved to axial coding (Creswell, 2013; Merriam, 2009). According to Merriam (2009), “data analysis is a

complex process that involves moving back and forth between concrete bits of data and abstract concepts” (p. 176). I followed the iterative data analysis process by reading all the transcripts as a whole, making notes about the first impressions, then reading the transcripts again line by line for further analytical insight. I highlighted the relevant words, phrases, and sentences from the organized codes or categories.

Coding is “the process of organizing the data by bracketing chunks or texts and writing word representing a category in the margins” (Creswell, 2014, p. 198). After identifying the key codes, I created a list of main codes used in this study. A qualitative codebook is “a table that contains a list of predetermined codes that researchers use for coding the data” (Creswell, 2014, p. 199). Some of these codes that were taken from the transcripts included instruction, knowledge, culture, L1/native language, differentiation instruction, practice, achievement, collaborative learning, strategy, ELLs’ self-esteem, confidence, and assessment.

4.3 Common Themes

Table 4.8 represented common themes that emerged from the interviews with six participating teachers. Four or more responses to a question classified a code as a common theme. Once the code was organized, they were developed into three categories. For this mixed-methods study the emerging themes were: 1) Funds of Knowledge; 2) Using L1; and 3) Teachers’ Attitude Towards Spanish ELL Students. Each emerging theme was presented to be the primary focus of the interview. The first emerging theme was Funds of Knowledge. This emerging theme was derived from the following codes: instructional strategies, differentiating instruction, L1, and knowledge. The second

emerging theme was Using L1 that included codes: ELLs' self-esteem, student-teacher relationship, culture, family, competency, achievement, collaborative learning, and emotional intelligence. The third emerging theme was Teachers' Attitude Towards Spanish ELL Students. This theme included these codes: ELLs' background and experiences, ELLs' self-esteem, pedagogical skills, assessment, and proficiency in L1 and L2. Table 4.8 showed the common emerging themes for this study.

Table 4.8

Common Emerging Themes

Emerging Themes	Codes
Teacher's Funds of Knowledge	Instructional strategies Differentiating instruction L1 knowledge

Using L1(Spanish)	ELLs' self esteem Student-teacher relationship culture Family competency Achievement Emotional intelligence Collaborative learning
Teachers' Attitude towards Spanish ELL students	ELLs' self-esteem Pedagogical skills Assessment Proficiency in L1 and L2

Then the codes were described with the excerpt examples in the codebook. The axial coding process grouped different codes under several major themes, which were: 1) Funds of Knowledge (FOK); 2) Using L1 (Spanish); and 3) Teachers' Attitudes Towards Spanish ELLs.

1) Funds of Knowledge

Interview analysis showed that teachers in the MLIS school perceived what students from linguistically and culturally diverse backgrounds bring to the classroom as “Funds of Knowledge” that helped learning. Teachers also believed that they needed instructional strategies to activate, such as funds of knowledge, to the best interest of students.

I read all the transcripts and recognized that teachers emphasized the word “knowledge” particularly in relation to their ELLs and the ELLs’ backgrounds, which the connected to the idea of “Funds of Knowledge” (FOK) theme. The term “Funds of Knowledge” is well-known to teachers of linguistically and culturally diverse students. Funds of knowledge is defined by researchers Moll, Amanti, Neff, and Gonzalez (2001), referring to “the historically accumulated and culturally developed bodies of knowledge and skills essential for household or individual functioning and well-being” (p. 133). It explained the importance of the teachers’ skills to build on students’ background experiences as important resources for classroom learning.

ELLs bring to school their experiences and background knowledge as a resource of which their first language is an important part. Teachers referred to various examples of how ELLs help each other with their FOK in different types of activities such as vocabulary, math problems, and translating. Mr. Adam stated that, “the Spanish speakers help with the vocabulary and most of the time they are helping” (Adam, personal communication, November 16, 2016). Teachers can build upon ELLs’ knowledge of their L1 to make direct comparison with English. For instance, teachers can ask students to

discuss the similarity and difference between word usage and parts of speech by using English and Spanish (Diaz-Rico & Weed, 2010). Furthermore, Ms. Nora explained that some of her ELLs shared their own ways to solve mathematics problems. Ms. Nora considered that ELLs brought their parents' method to teach mathematics and shared this method with their peers in Spanish as "kind of good diversity" (Nora, personal communication, November 16, 2016).

Additionally, interview analysis found that teachers perceived instructional strategies are part of teachers' funds of knowledge in relation to their impact on students' achievements and language acquisition. Most of the participants mentioned the "differentiating instruction."

Instructional strategies addressed the needs of the population of ELLs and English proficient students by increasing the complexity of the tasks or structures for native speakers, while supporting second language learners to acquire the same objectives through scaffolding practices when students were integrated for instruction. (Hernández, 2011, p. 143).

As a differentiation instruction example, Ms. Tina stated, "I do a lot of TPR [Total Physical Response] and I try to do a lot of work with my hands and body" (Tina, personal communication, November 16, 2016). Total Physical Response (TPR), developed by Asher (2003), is a language teaching technique that connects speech and action. The second language classes use this technique as an effective teaching methods for ELLs. Another example was to help ELLs to understand content-heavy vocabulary like in mathematics. Ms. Sarah, the ELL teacher, explained how she helped her students

to understand the mathematics vocabulary by using her Spanish-English bilingual skills. She stated, “when I am helping ELLs understand in English, if they did not recognize those words in English, I can say [this is the word] in Spanish and this is the word in English” (Sarah, personal communication, November 10, 2016). She uses her Funds of Knowledge to help her ELLs by explaining and translating some words in ELA and mathematics classes.

2) Using L1, Spanish, for Student Self-Confidence

While teachers in this study related the importance of their instructions using ELLs’ L1 for content comprehension, they also recognized that instruction in the students’ first language enhanced ELLs’ self-esteem. For instance, Ms. Elizabeth stated, “giving the instructions in their native language is to help them with self-esteem. It helps them to become confident in the classroom and to be more proactive” (Elizabeth, personal communication, November 16, 2016). In addition, Ms. Megan explained that ELLs feel more confident and safe in this language immersion school. As a result, ELLs “increase their knowledge, increase their vocabulary [words], be able to ask questions, and assist the other [students]” (Megan, personal communication, November 16, 2016).

As mentioned earlier, the research question of this study was, how do elementary teachers describe, through interviews, the impact of instruction in the first language of ELLs (Spanish), and their academic learning in a Spanish one-way immersion school? This question investigated the using of L1 (Spanish) as an instructional tool. Most of the participants showed that using L1 (Spanish) had a great benefit to ELL students in a one-way immersion school. Ms. Tina mentioned, “there’s a benefit because they are getting

more control of the grammar and the way to write and the way to read in their native language” (Tina, personal communication, November 16, 2016). Also, this teacher mentioned that there’s a benefit of using Spanish for non-ELLs. She stated, “it would be beneficial because they are able to understand different kinds of expressions, different ways to express themselves and able to get more vocabulary” (Tina, personal communication, November 16, 2016).

Moreover, Ms. Megan said, “I believe in all kids here [in MLIS school] when they got instruction in their native, Spanish, they were performing better” (Megan, personal communication, November 16, 2016). Ms. Nora said, “It is beneficial because they are building [developing their own language]” (Nora, personal communication, November 16, 2016).

Importantly, using L1 could provide positive self-images for ELLs because language is a vital part of student identity (Garcia, 2005; Gutierrez, 2002). Most of the participants related ELLs’ social interaction to the academic achievements. ELLs can achieve better if they have a good social interaction based on a strong self-esteem with the other students and teachers. The use of L1 gives ELLs self-confidence and motivation to participate, particularly, when students can use their L1 to form friendships and make connections (Sutton, 2010).

3) Teachers’ Attitude Towards Spanish Speaking ELLs

Data analysis indicated that interviewed teachers had showed their attitudes and viewpoints towards ELLs. The teachers mentioned some of their ELLs’ backgrounds and experiences. ELLs shared these experiences with their teachers and other students. For

instance, Ms. Tina said, “I was very impressed when I came to the school here and I was greeting in Spanish by English language students” (Tina, personal communication, November 10, 2016).

Using ELLs’ first language, Spanish, gives them more self-esteem and motivation to learn and educate through their L1 (Sutton, 2010). In addition, Ms. Megan stated, “[in] the Latino culture, we have kids who are very shy and it is hard for them to open to the world” (Megan, personal communication, November 16, 2016). The language immersion schools who used ELLs’ first language as an instructional tool provided them with confidence, encouragement, and self-esteem to participate. Additionally, Ms. Megan mentioned that ELLs tried to make a connection between their home and school. “They speak Spanish in order to perform better in the school by working hard” (Megan, personal communication, November 16, 2016).

Another interesting point was that the ELLs in the MLIS school tried to share their home experience with their teachers and other classmates. For instance, Ms. Elizabeth stated,

I am from Honduras and I had a kid from Mexico. I said a word that most kids did not understand, but the word that he used in his country, they did understand [it] so [ELLs] actually help me to make a connection with the kids, it helps to have ELL kids from different parts.

(Elizabeth, personal communication, November 16, 2016).

4.4 Challenges

All the participants mentioned some challenges that ELLs had related to the FOK theme in the MLIS school. Some of the challenges that ELLs had in the MLIS school were that the ELLs were not sufficiently engaged in reading in either their first language, Spanish, or English. ELLs must learn to read more therefore they can understand more vocabulary words. The ELLs should learn the meaning of new words. ELLs need to improve their vocabulary in order to develop their academic language. Ms. Sarah, the ELL teacher stated, “They do not have bigger vocabulary in English, the kids do not read a lot in Spanish or English” (Sarah, personal communication, November 10, 2016). Two participants explained that the Spanish ELL students did not read a lot. Also, Mr. Adam said,

There is a relationship between Spanish speakers and reading at home. The Spanish students read less than English speakers at home and their excuses are they do not have Spanish books at home, but they need to read Spanish and here [in MLIS] we have Spanish books.

(Adam, personal communication, November 10, 2016)

Additionally, the challenges that students in the MLIS school had were the vocabulary and mathematics; for instance, Ms. Nora argued that ELLs faced a challenge when they learned the “measuring data” (Nora, personal communication, November 16, 2016) because the mathematics vocabulary and concepts are different in English and Spanish. In addition, Mr. Adam said, “it is tricky because they are going to be evaluated in a different language when the vocabulary is not the same and they are going to

struggle” (Adam, personal communication, November 16, 2016). Teachers must understand that graphs, mathematics’ symbols, and some vocabulary considered as linguistics challenges for ELL students (Song & Coppersmith, 2016).

The other challenge that ELLs faced at the MLIS school was they have been taught through their first language, but they have to take these assessments such as the Missouri MAP and NWEA in English language. This was a vital point that related to ELLs’ academic achievements because I, as a researcher, believed it affected their academics since they learned in Spanish and tested in English. The participants referred to this point;

Ms. Sarah explained that she did a great deal of mathematics teaching with ELLs such as tape measuring and shapes. Also, she mentioned that most of the ELLs did not understand what they have been asking to do in the test. Ms. Sarah stated, “the math I teach is test prep [preparation]” (Sarah, personal communication, November 10, 2016).

Furthermore, she added that “I got to translate it because we did that last year interpret and translate and help them answer the math questions” (Elizabeth, personal communication, November 10, 2016). According to Gottlieb (2006), translated assessments are best beneficial for ELLs who have been taught in their first language, such as Spanish and comprehend the academic information and vocabulary in their first language. The benefit of the translated tests is that some students are competent to totally show their content-subject knowledge throughout their L1 (Gottlieb, 2006). Ms. Tina explained that she taught mathematics in Spanish and her students have to do the MAP test in English. She said, “we have a huge responsibility it’s really very committed to our

immersion program, but also we have to teach them in English” (Tina, personal communication, November 10, 2016).

Mr. Adam stated that “we take the NWEA test, and I got students who their grades in Spanish are really good and high in Spanish, but in the NWEA, there’s a course they did not get the minimum” (Adam, personal communication, November 16, 2016). There was an achievement gap between the tests of the same student because of the language that was used in the tests.

However, one teacher argued that math is a language of numbers, not related to English, Spanish, or Chinese. She stated that “actually in math language, its number, it is not about English, French, Spanish or Chinses. It’s a language of numbers and there’s no advantage there, whether its students master Spanish or English or both” (Tina, personal communication, November 10, 2016). ELLs need to learn math vocabulary as well as math operations. Students should use “symbols, oral language, written language and visual representations such as graphs and diagrams” (Schleppegrell, as cited in Song and Coppersmith, 2016, p. 7).

Ms. Elizabeth directed to a good point that ELL students may face in the United States schools, which it is how they would be accepted by the other students, more specifically, the native English-speaking peers. Ms. Elizabeth mentioned that, I believe by the time they get to fifth grade, they understand that, their classmate is native Spanish [-speaking students] and that is the way they speak, but I, a big challenge I do believe they sometimes work extra harder to feel accepted, to be accepted in group. (Elizabeth, personal communication, November 16, 2016)

ELLs wanted to be accepted by their classmates more than their native language even though they had the opportunity to speak and learn through their native language. “They speak more English than Spanish because they do not want to feel like the outcast; they want to approve everyone around them they are competent in English as they are in Spanish” (Elizabeth, personal communication, November 16, 2016).

Ms. Tina referred that the ELLs did not master both languages, English and Spanish. I believed that ELLs at the elementary level were still developing their language skills. Ms. Tina said,

Most of my Spanish-speaking students, they are born here or came to America at a very young age, I can’t say they mastered Spanish more than English. Actually, most of the time you will see they did not master any of the two languages [English & Spanish] and they have problems in both languages.

(Tina, personal communication, November 10, 2016).

4.5 Summary

The results of this mixed-methods study were organized by the research questions. For quantitative research question, the results displayed there was no statistically significant differences between ELLs and non-ELLs students on mathematics and ELA scores.

For research question one the results displayed that the teachers agreed with an agreement that there was a benefit of using ELLs’ first language (L1), Spanish as an

instructional tool. It helped them to communicate with their family, relate to their culture, and made them more confident and competent. In addition, the semi-structured interviews provided a strong insight into the unique approach of using L1 as an instructional tool at the MLIS school. The themes such as competency, self-esteem, and importance of a student-teacher relationship shed light on the importance of the native language/L1.

In summary, this mixed-methods study contained quantitative and qualitative data demanded for a complete comprehension of these six teachers' perceptions and belief on using ELLs' first language as an instructional tool. Analysis of the data has already confirmed that there were academic and social benefits of using ELLs' first language. Chapter Five follows and will include a summary of the study, mixed-methods and quantitative and qualitative findings, recommendations, and future implications.

CHAPTER FIVE: DISCUSSION

The chapter will review the findings from this convergent parallel mixed-methods study. It will provide a summary of the results from the ANOVA test and interview data, limitations of the study, and implications. This chapter concludes with recommendations for future research and a final summary.

The purpose of this mixed-methods study was to investigate if using Spanish as an instructional tool has an impact on the Spanish English language learners' (ELLs) academic achievements in a Midwestern Spanish language immersion school. This study examined the significance of ELLs' academic achievements in mathematics and ELA. The researcher wanted to explore how a Spanish one-way immersion program affects ELLs' achievements, and to understand how teachers perceive the effectiveness of using Spanish as an instructional medium by exploring Missouri Assessment Program (MAP) results in mathematics and ELA. For this quantitative study, the study composed one question, is there a statistically significant difference in mathematics and ELA mean scores on the MAP for ELLs and non-ELLs in a one-way Spanish immersion school? For a qualitative study, there was one research question that the interview data from the six teachers may support, and that was, how do interviews with teachers of ELLs perceive instruction with ELLs' first language (Spanish) to support their academic achievement in a one-way immersion school?

5.1 Review of Methodology

The sample of this study consisted of a participant sample of students and teachers. The quantitative sample included of 181 students in third, fourth, and fifth

grades. The 2016 MAP data was used in this study to examine mathematics and ELA scores. The number of ELLs was 24 and the number of non-ELLs was 157. A one-way ANOVA test was used to investigate the difference in means of these variables: mathematics scores, ELA scores, ELLs, and non-ELLs

The qualitative sample consisted of six bilingual teachers, who interviewed at their school. The interview was the main data collection strategy in qualitative research. A semi-structured interview involved ELL's academic achievements when they were taught using their first language, and the role of the social competency and its connection to ELLs' academic advancements.

5.2 Summary of the Findings

The results of this convergent parallel mixed-methods that used a one-way ANOVA test investigated the group differences in their MAP test scores of mathematics and ELA between ELLs and non-ELLs. The quantitative research question for the study included: is there a statistically significance difference in MAP ELA and mathematics mean scores? The independent variables included ELLs and non-ELLs, and dependent variables included the mathematics and ELA scores.

Results showed that there was not a statistically significant difference between ELLs and non-ELLs on ELA scores. Therefore, this study confirmed that ELL students who are taught by using their first language, Spanish, do not statistically perform differently than their non-ELL peers on measure of ELA scores. The mean and the standard deviation in the mathematics test for ELLs were less than the mean scores for

non-ELLs. On the ELA test, the ELLs' mean scores were greater than the non-ELLs' mean scores, but ELLs' SD was lower than the non-ELLs' SD. The Levene's test for Equality of Variances was used to test the assumption of homogeneity of variance. Levene's test used the level of significance set for ANOVA ($\alpha \geq .05$) to test the assumption of homogeneity of variance. For the ELA variable, the value for Levene's test was greater than alpha value with a significant (p). Because the significant value was less than our alpha. The assumption of homogeneity of variance was not met. Levene's test results showed that this data was not normal as ANOVA was inappropriate to run for ELA scores. For mathematics variable, the values for Levene's test was 2.940 with a significant (p) value. This p value was greater than the alpha, I concluded that there was not a significant difference between the two group's variances. The two groups have equal variances. The assumption of Homogeneity of Variance was met. Therefore, I moved forward to report ANOVA test on mathematics test. The results of the ANOVA on the mathematics was not significant. Additionally, the results of the ANOVA test showed there was no statistically significant difference on the mathematics mean scores on the MAP for ELL compared to non-ELL students.

The results of the random population showed that on the ELA test, the ELLs' mean scores were higher than the non-ELLs' mean scores. On the mathematics test, ELLs' mean scores were greater than the mean scores of non-ELLs. In this random sample, Levene's test was used to assess normality. Levene's test results showed that this data was not normal as ANOVA is inappropriate to run for ELA and mathematics scores.

For mathematics variable scores, the F values for Levene's was not significant (p). This p value was greater than the alpha; therefore, this report concluded that there was not a significant difference between the two group's variances. The assumption of Homogeneity of Variance was not met. therefore, the results concluded that there was no statistically significant difference on the ELA mean scores (on the MAP for ELL compared to non-ELL students).

Missouri DESE showed greater achievement gap in mathematics between ELL and non-ELLs than in ELA. in that scene, the mathematics MAP means of the ELL group in MLIS did not show that much difference between ELLs and non-ELLs in MLIS ($M = 2.21$), which might be interpreted that using Spanish as an instructional means might help ELLs showed less achievement gap in mathematics. Even though, the mean scores were rather low in both groups, at least the ELLs in MLIS did not show the achievement gap as much as other ELLs did in the state of Missouri. Additionally, there is a misleading myth about ELLs' mathematics learning, "the transition from social language to academic language is easier for ELLs in mathematics than in other subjects" (Kersaint, Thompson, & Petkova, 2009, p. 60). However, when comparing ELLs' mathematics and ELA scores in state tests to non-ELLs, many ELLs have a greater achievement gap in math scores than in ELA (State, 2015).

The qualitative research question for this convergent mixed-methods study included: How do interviews with teachers describe instruction with ELLs' first language (Spanish) to support their academic achievement in a Spanish one-way immersion school? The results of the qualitative study with the interview data reported the results

with three emerged themes: 1) Funds of Knowledge (FOK); 2) Using L1 (Spanish) in a one-way immersion school; and 3) Teachers' Attitudes Towards Spanish ELLs. The participants were six bilingual elementary teachers, who were interviewed at their school. The main goal of this interview was to investigate the influence of using ELLs' first language as an instructional tool, and the benefit of using L1 on ELLs' learning.

In summary, the results of this convergent parallel mixed-methods study explained that there was no significant difference between ELLs and non-ELLs of mathematics and ELA scores. ELLs in a one-way immersion school perform similarly to their non-ELLs in measure of mathematics and ELA. Based on the results of this convergent parallel mixed-methods study, all teachers confirmed that it was an excellent idea to use ELLs' first language as an instructional tool. They insisted that L1 represented a great benefit for ELLs who learn through their L1. Also, ELLs can develop their first language besides acquire English as a second language. All teachers in this study mentioned the importance of the social aspect in this immersion school (MLIS) because it helped ELLs communicate easily, especially Latino students who were shy and timid. They were encouraged to be more social. As a result, the social competency will give ELLs the ability to perform academically. Also, the language of the tests such as the Missouri MAP and NWEA was affected on the students' performance, more specifically, the ELLs because those learners were taught by their first language, Spanish, and they have been tested by English language.

5.3 Discussion of the Findings in the Context of the Relevant Research

The purpose of this mixed-methods study was to explore the benefit of using ELLs' first language, Spanish, as an instructional tool in a one-way immersion school. It also explained Cummins' interdependence hypothesis. The findings of this study supported using ELLs' first language as an instructional tool.

Cummins' Common Underlying Proficiency theory (CUP) and first language knowledge could be transported through the development of L2. Students who were studying one language obtained a group of abilities and metacognitive knowledge that they can also achieve when operating with a second language (Cummins, 1998). Moreover, Cummins' (1998) CUP described the relationship between the development of cognitive and academic skills of ELL's first language and their development in the second language. Miss Nora mentioned that using Spanish language, the ELLs' first language, had a benefit for ELLs. They can benefit academically, and at the same time they can be good sources of vocabulary for other students. "They have different expressions and so that [they are] enriching the other learners with many vocabulary" (Nora, personal communication, November 16, 2016). Similarly, Mr. Adam explained that this language immersion program that used Spanish as an instructional tool, is beneficial for non-ELLS because those students learned "different kinds of expressions, different ways to express themselves, and able to get more vocabulary" (Adam, personal communication, November 16, 2016). When non-ELLS learned a second language besides their L1, the non-ELLS and their parents recognized the importance of acquiring more than one language (Gomez et al., 2005).

Cummins' (1998) CUP designed the basis for language education and built a possible transfer of language proficiency. This theory emphasized that any development of CUP in one language absolutely influences competence in another language. In addition, during the procedure of learning different languages, students developed their comprehensions of the language's structure and task (Cummins, 2007). Miss Megan explained that the ELLs made a connection with their home language and the English language. She mentioned that ELLs speak their L1 in order to perform better in the class, and [they] go to English world to make the connection" (Megan, personal communication, November 16, 2016).

Additionally, Cummins (2000) created a difference between basic interpersonal communication skills and cognitive academic language proficiency. He concluded that ELLs need two years to learn social English and five years to learn academic language (Cummins, 2000). For instance, Ms. Elizabeth mentioned that "[the] Spanish speakers in my class, it was very beneficial for them to hear and listen to the instructions in Spanish" (Elizabeth, personal communication, November 16, 2016). Furthermore, Ms. Sarah mentioned that "it is a normal" to be from different country and speak a different language, ELLs are shy and quite when they are new. She confirmed that ELLs did not talk or communicate with their peers until "they got experience with the social language when they played with their peers in the playground" (Sarah, personal communication, November 10, 2016).

In addition, all the participants benefitted the importance of the social experience. ELLs needed to acquire social language in order to achieve academically. Howard et al.

(2007) explained that ELLs can accomplish better when their teachers used positive social and instructional communications with them. Ms. Elizabeth said that, “I believe the academic did not take place until the social aspect is under controlled. When they [are] constantly thinking about it whether their friends accepting them whether one of their friends is making fun of them” (Elizabeth, personal communication, November 16, 2016). Ms. Elizabeth believed that the ELLs did not pay attention to their academic learning if they did not develop the social part. Also, ELLs needed both the academic and social characteristics in order to be succeed.

Also, Collier and Thomas’ (2007) prism model stated that “major developmental processes that children experience during their school years that need [s] to be supported at school for language acquisition and learning to take place” (p. 333). This model can be used for ELLs and non-ELLs. In addition, the prism model can be used to close the educational attainment gap in a second language. This model has four major elements: sociocultural, linguistic, academic, and cognitive processes. Additionally, Gomez et al. (2005) indicated that language immersion schools have strengthened the importance of languages other than English in numerous societies across the United States. In some communities, language immersion programs have minimized tensions among groups who speak different languages (Gomez et al., 2005). Furthermore, Ms. Nora believed that the ELLs speak and think in two languages, their first language and English. These students bring their social and culture knowledge from home and they share with the other students. She considered the ELLs as “helpers” and collaborators in the class.

This convergent parallel mixed-methods research study provides a frame of understanding of one-way immersion programs. A review of the current works on immersion programs in the U.S. shows a lack of studies on one-way immersion programs, where basic content is taught within a mixture of foreign and native languages (Ballinger & Lyster, 2011). As mentioned earlier in Chapter One, the popularity in studies of bilingual education in the United States emphasized two-way immersion programs. In these programs, there were equal numbers of native English-speaking and Spanish-speaking students. Although, the recognition of two-way immersion programs research explained the consequences of these programs that relating their importance on English language achievement for ELLs and the perceptiveness of Hispanic families as second class citizens in the school background (Dorner, 2011). Ms. Elizabeth described that in immersion school, ELLs did not feel isolated, but rather, since they are surrounding by a lot of English speakers, they feel very confident on speaking their Spanish since they hear the teacher is speaking Spanish, they hear the instruction in Spanish, so I think it helps them socially to interact among each other, they feel a little bit more empower to use the language especially since they are in the school like this one, they speak Spanish with teachers, with the principal, and they know they not to be embarrassed about it. (Elizabeth, personal communication, November 10, 2016). Broner and Tedick (2011) mentioned the social and linguistics features that impacts language use in a one-way immersion program. They discovered that students used Spanish more than English in Spanish instructional time.

This research explored a one-way Spanish immersion program accommodated in a Midwestern area. One-way immersion programs placed a significant emphasis on increasing students' understanding cultural practices and perceptions for a specific native group (Wilson & Kamana, 2001). This immersion program gave students a great

opportunity to learn Spanish. Also, this study encouraged one-way immersion programs as a practical program of instruction. Researchers recommended the important role of the first language and its use in teaching and instruction (Cummins, 1998; Garcia, 2000; Thomas & Collier, 2001). ELLs benefit from using their L1 as instructional tool.

Table 5.1 showed the themes of the qualitative study, theoretical research, and the support from the quantitative study.

Table 5.1

The qualitative study's themes, theoretical research, and the support from the quantitative study

Themes for Qualitative	Theories/Researchers	Support from Quantitative
Teacher's Funds of Knowledge	<ul style="list-style-type: none"> Funds of knowledge is defined by researchers Moll, Amanti, Neff, and Gonzalez (2001), referring to "the historically accumulated and culturally developed 	This study confirmed that ELL students who are taught by using their first language, Spanish, do not statistically perform differently than their non-ELL peers on measure of ELA scores.

	<p>bodies</p> <p>of knowledge and skills</p> <p>essential for household</p> <p>or individual</p> <p>functioning and well-being” (p. 133).</p> <ul style="list-style-type: none"> • Moll (2015) discussed the importance of teacher's funds of knowledge, as he stated, “to understand how teachers’ experiences, live experiences, interact with the academic knowledge and pedagogical knowledge and concepts they are supposed to master as professional educators” (para. 3). 	
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	<ul style="list-style-type: none"> • First language growth allowed a definite impact on ELLs' English advancement (Spaulding et al., 2004). • Armstrong and Rogers (1997) investigated third-grade students who received a Spanish class three times a week for one semester, and they revealed that children in Spanish courses achieved significantly better than the students who did not receive Spanish education in mathematics and English Language Arts (ELA) on the Metropolitan 	
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	Achievement Test (MAT).	
Using L1, Spanish, for Student Self-Confidence	<ul style="list-style-type: none"> • ELLs will benefit from using their first language as an instructional tool (Li, 2012). • There is a positive and effective use of first language (L1) in different immersion programs and contexts (Liebscher, 2014). The use of L1 in the classroom can be a clear function to support learning, and L1 could be a useful and necessary tool in this process of becoming multilingual 	There was no significant difference between ELLs and non-ELLs

	<p>in language immersion programs (Liebscher, 2014).</p> <ul style="list-style-type: none"> • Salmona (2014) realized that when students used their first language, they were more engaged in the activity and their level of participation was higher. Salmona also noticed that the lesson ran in an easier and positive way. • ELLs can develop their reading skills better when they were educated in their first language and English from the beginning of the school year (Slavin & Cheung, 2003). 	
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	<ul style="list-style-type: none"> • Cummins (1979) explained that when students can acquire higher order thinking skills in their first language, they obtain them in a second language as well. • Cade's (1997) study explained the designing, growth, and applying of the ELLs' first language in education in the Kansas City, Missouri, Public School District. Cade showed that the ELLs improved their test scores after they used ELLs' first language as an instructional tool, and they were able to 	
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	<p>think more critically</p> <p>and understand their</p> <p>academic content better</p> <p>in their first language.</p> <ul style="list-style-type: none"> • Cummins' (1979, 1980, 1998, 2007) Underlying Proficiency model of bilingualism theory, suggested the idea of a Common Underlying Proficiency (CUP) to describe the relationship between development of cognitive and academic skills of ELLs' first language and their development in the second language (English). 	
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Teachers' Attitude towards Spanish ELL students	<ul style="list-style-type: none"> • The English Language Learners' linguistic progress remained beneficial for educational success in another language (Genesee et al., 2006). • Research described that the helpful communication between teachers and students is a significant instructional purpose; for instance, when teachers use encouraging social and instructional communications with ELLs, these students 	The quantitative study approved that the ELLs performed as the same as the non-ELLs.

	<p>achieve better academically (Howard, Sugarman, Christian, Lindholm-Leary, & Rogers, 2007).</p> <ul style="list-style-type: none"> • Cummins (2000) explained the difference between two types of language, Basic Interpersonal Communicative Skills (BICS) and Cognitive/Academic Language Proficiency (CALP). • Broner and Tedick (2011) mentioned the social and linguistics features that impacts language use in a one-way immersion program. They 	
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	<p>discovered that students</p> <p>used Spanish more than</p> <p>English in Spanish</p> <p>instructional time.</p>	
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5.4 Study Limitations

This convergent parallel mixed-methods study included quantitative and qualitative research designs. The data of these two designs were triangulated. The purpose of triangulation in qualitative study is to increase the credibility and validity of the results. Triangulation is defined as “attempt to map out, or explain more fully, the richness and complexity of human behavior by studying it from more than one standpoint” (Cohen & Manion, 2000, p. 245). I used two different types of data in order to confirm the consistency of findings made by various collection methods. Therefore, the results were applicable only to populations similar to that of this study. The interview’s sample was six bilingual teachers, and these interviews were not offered to the other teachers from different districts who did not implement one-way immersion programs at their schools. The quantitative part was dependent on data that already existed, ELLs’ and non-ELLs’ mathematics and ELA MAP scores. The sample of the quantitative part was 181 students from third, fourth, and fifth grades. The ELLs’ sample

was 24, and non-ELLs' was 157. The ELLs' sample was small compared to non-ELLs' sample. Besides, I did not have access to the content category scores of each item; therefore, I did not analyze each item according to the standard base. Also, there are four levels of achievement that students can score within on the MAP test. The four levels include: below basic, basic, proficient, and advanced. The achievement levels are based on the number of questions that are correctly answered.

5.5 Implications

In this convergent parallel mixed-methods study, the researcher needs to “inform the reader of any unexpected findings or patterns that emerged from the data and report a range of evidence to support assertions or interpretations presented” (Stainback & Stainback, 1988, pp. 80-81). This type of mixed-methods presented both quantitative and qualitative data to afford various kinds of information, such as views of participants qualitatively and scores on instruments quantitatively, and both produced results that must be the similar (Creswell, 2013). There were some implications for educational immersion programs: immersion language programs should focus on both the native and second languages. The instructions should be in both languages in order to give a good opportunity to all students to comprehend and acquire both languages. ELLs benefit from these immersion programs by developing their first language and acquiring English as a second language.

The other implication was the standardized tests that were used to measure students' academic achievements. In this convergent parallel mixed-methods study, the

MLIS school used the Spanish language as an instructional tool for all the subjects except ELA class. The ELLs and non-ELLs in the MLIS school were tested using English language on the Missouri MAP and NWEA tests. It would be a great opportunity to test students using a language in which they are taught. According to the Northwest Evaluation Association (NWEA), there is a Spanish-language version of MAP mathematics (NWEA, 2016). The MLIS school should use this version of the MAP test since this school using Spanish as an instructional tool. I think if the school can use Spanish-language MAP test, it will influence ELLs' academic achievements. I encourage MLIS school to adapt all the standardized tests using Spanish language in order to look for students' growth and achievement.

5.6 Recommendations for Future Research

This convergent parallel mixed-methods study found that there was a benefit of using students' first language as an instructional tool. It helped ELLs develop their native language besides learning English. Also, it affected their academic achievements since they were taught by their L1. Educators should be encouraged to implement language immersion programs. It was a great opportunity for ELLs and non-ELLs to learn second language. In addition, for future studies, I would conduct a study that compares this immersion school with the other immersion schools in the same area. Also, it could be great to conduct a study to track ELLs' academic achievements by analyzing all the standardized tests and their English and Spanish languages proficiency levels.

Based on both the quantitative and qualitative findings from this convergent parallel mixed-methods study, I concluded that ELLs who enrolled in a Spanish one-way immersion school acquire the benefits of using their first language as an instructional tool, even though they are in the process of language developing. Also, those students would reach high levels of bilingualism in English and Spanish if they were admitted to this program from the first grade till the fifth grade. Ms. Megan mentioned that “if you register one of your kids from the kindergarten, I promise you, he [/she] will graduate from the fifth grade, he [/she] will be very fluent in English and very very fluent in Spanish” (Megan, personal communication, November 14, 2016). Here, Ms. Megan described the benefit of this one-way immersion school in the metropolitan area. She confirmed that students could be bilingual in both languages after five years of their elementary education.

I concluded that ELLs benefit from Spanish one-way language immersion school. They have learned their first language and acquired English language. These students can achieve academically better than those who enrolled in only English instruction. Using L1 as an instructional tool could be social and academic benefits for ELLs. They can communicate with their parents and family members. Those students who are shy and timid can communicate easily with their peers who spoke the same language.

ELLs feel more confident and have self-esteem when they are in a Spanish one-way immersion school because of the environment of this program that welcomed ELLs and used their L1 as an instructional language. Alternatively, ELLs need to acquire the language of the community where they lived in in order to achieve better on the

standardized tests. I recommended the Spanish one-way language immersion school to make an equal amount of time between English and Spanish. It is important point to focus on both languages. ELLs can benefit from language immersion programs by developing their native language as they are acquiring English (Alanis, 2000).

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Appendix A. Consent form



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Informed Consent for Participation in Research Activities English Language Learners' Academic Achievement in a Spanish Language Immersion

School

Participant _____ HSC Approval Number

Principal Investigator Ibtihal D. Salman PI's Phone Number 314-210-0462

1. You are invited to participate in a research study conducted by doctoral candidate Ibtihal D. Salman and supervised by Dr. Kim Song. The purpose of this study is to examine how using English Language Learners' first language as an instructional tool affects their achievement level. Additionally, the study will examine how teachers utilize classroom's instruction.

2. a) Your participation will involve the following activities:

- You will be asked to complete an interview related to how you implement Spanish language as an instructional medium
- You will be asked about the impact of using English Language Learners' first language as an instructional tool for academic achievement.
- The interview will be recorded using an iPad.

b) The amount of time involved in your participation will be approximately 30-40 minutes. The interview will take place at your school site. There are no anticipated risks associated with this research.

c) In addition, I will ask the principal to release students' MAP scores on math and English Reading Arts (ELA) in order to compare the academic achievement of English Language Learners and native English-speaking peers.

4. There are no direct benefits for you participating in this study. However, your participation will contribute to our knowledge about language immersion schools and English language learners' academic achievement.
5. Your participation is voluntary and you may choose not to participate in this research study or to withdraw your consent at any time. You will NOT be penalized in any way should you choose not to participate or to withdraw. You may choose to not answer any questions that you do not want to answer.
6. By agreeing to participate, you understand and agree that your data may be shared with other researchers and educators in the form of presentations and/or publications. In all cases, your identity will not be revealed. In rare instances, a researcher's study must undergo an audit or program evaluation by an oversight agency (such as the Office for Human Research Protection). That agency would be required to maintain the confidentiality of your data. In addition, all data will be stored on a password-protected computer and/or in a locked office for three years, and deleted afterwards.
7. If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Ibtihal D. Salman at (314)-210-0462 or the Faculty Advisor, Dr. Kim Song at (314) 516-5924 or the Office of Research Administration at (314) 516-5897.

I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records. I consent to my participation in the research described above.

Participant's Signature

Date

Participant's Printed Name

Signature of Investigator or Designee

Date

Investigator/Designee Printed Name

Appendix B.



University of Missouri - St. Louis

Application for Expedited Review by the Institutional Review Board

Name: Ibtihal D. Salman

Title: English Language Learners' Academic Achievement in a Spanish One- Way
Immersion School

The purpose of this study is to examine the impact of using ELLs' first language as an instructional tool on Spanish English language learners' (ELLs) academic achievement, who are enrolled in a Midwestern Spanish language immersion school. This study will investigate the significance behind ELL students' academic achievement on math and ELA. Also, this study wants to examine how teachers perceive the effectiveness of instruction on students' achievement and more specifically, English language learners (ELLs). The research questions for this study are:

1. How does instruction in the first language of ELLs, Spanish, impact on their success in a

Spanish one-way immersion school?

2. How does a Spanish language immersion school influence ELL students' mathematic and

ELA academic achievement as measured on standardized test scores?

- a. Is there a significant difference in math scores on MAP for ELLs and native English-speaking in a Spanish immersion school?
- b. Is there a significant difference in ELA scores on MAP for ELLs and native English-speaking in a Spanish immersion school?

H0: There is s statistically significant difference in mathematic mean scores on MAP for ELLs and native English-speaking students in a one-way Spanish immersion school.

H1: There is s statistically significant difference in ELA mean scores on MAP for ELLs and native English-speaking students in a one-way Spanish immersion school.

The research will be conducted at Spanish immersion school in St. Louis, Missouri. The subjects of this study will be ten teachers of third, fourth, and fifth grades, based on their agreement. The researcher will be collected data by interviewing the teachers, and the researcher will ask teachers to release students' mathematic and ELA MAP scores in order to compare between ELLs and native English-speaking students. The researcher will send a consent form to the teachers to sign it before the interview. Also, the interview protocol with be attached with the consent form. The data that the study will obtain from the teachers, is about the teachers' instruction, and how using Spanish as an instructional tool would impact ELLs. The researcher will be recorded the interview by

using iPad, before that, the researcher should obtain permission from the participants.

The audio files will be used and they will be stored and destroyed following data transcription. The researcher will be protected the identity of individual participants.

Participants' name should not be used in any publication. In order to assure confidentiality, the researcher will be used fictions names or codes. There is no risk to the participants in this study.

Appendix C. Interview Protocol with Classroom Teachers

Each interview will take approximately 30-40 minutes and will be conducted by the researcher. The interviews will be digitally recorded and later professionally transcribed.

Where appropriate, the researcher introduced follow-up questions and clarifying questions not listed in the protocol

Theme #1: Impact of using Spanish language when teaching ELLs

1. How does using Spanish in your instructional tool benefit Spanish-speaking ELLs' academic achievement in mathematics and ELA?
 - a. Could you describe the advantage/s of using Spanish language as an instructional tool for ELLs?
 - b. Would you share with me about any challenges achievement ELLs have in terms of their academic achievement in mathematics and ELA?

Theme #2: ELLs' social language

2. How does using Spanish as the language of instruction impact ELL's social language and social competency?
 - a. Could you describe advantages of using Spanish when ELLs interact with other students and the teacher during classes?
 - b. Could you describe benefits of using Spanish between ELLs during lunch and recess?
 - c. Could you describe the positive relationship between social competence and academic achievement?
 - d. Could you share with me any challenges that you have with your ELLs' that are related to developing their social relationship/competence?

Additional notes/ Comment

Appendix D

Semi- structured Interview Raw Data Matrix:

Sample Excerpt from Individual Teacher	Code
<p>“there’s a benefit because they are getting more control of the grammar and the way to write and the way to read in their native language. For those kids, whose first language is not Spanish, it would be beneficial because they are able to understand different kinds of expressions, different ways to express themselves and able to get more vocabulary”.</p>	<p>ELLs’ self esteem</p> <p>Student-teacher relationship</p> <p>cultural</p> <p>Family</p> <p>competency</p> <p>Achievement</p> <p>L1</p>
<p>“I believe in all kids here when they got instruction in their native, Spanish, they are performing better...when they are getting instructions in Spanish they see the difference here they demand the language, they use it like the one who always are”.</p>	<p>L1</p> <p>Achievement</p> <p>Family</p> <p>L1 encourage use</p> <p>Assessment</p> <p>Sociocultural</p>
<p>“It is beneficial because they are building, they are able to build their first language</p>	<p>Achievement</p> <p>L1</p>

<p>after base so from that when they achieve like the success they are trying to get in Spanish, their native language”.</p>	<p>Family</p> <p>Reflection</p> <p>progress monitor</p>
<p>“The Spanish speakers help with the vocabulary and most of the time they are helping! And the Spanish speakers, I think, it is easier for them. They are in learning process and they are speaking English in recess because most of our culture is American, and at home they speak Spanish”. “They have more vocabulary. At the same time when they want to express themselves in reading, the English-speaking students did better than the Spanish students”.</p>	<p>Collaborative learning</p> <p>Knowledge</p> <p>L1 culture</p> <p>Sociocultural</p> <p>achievement</p> <p>vocabulary</p> <p>Collaborative learning</p> <p>L1 culture</p> <p>Sociocultural</p> <p>achievement</p> <p>vocabulary</p>

<p>“When I am helping students (ELL) understand in English let’s say for example shapes or geometry if they know how to figure the area or parameter of value or something, but if they did not recognize those words in English. I can say “Da Da” in Spanish this is the word in English and this is how pronounce it”.</p>	<p>Instructional strategies</p> <p>math pedagogy</p> <p>Differentiating education</p> <p>reflection</p>
<p>“At the higher levels, I think yes, some of the boys and two of the girls who in the class when you met me are now able to express themselves very well in both languages”.</p>	<p>Achievement</p> <p>L1</p> <p>Knowledge</p> <p>Proficiency</p> <p>Linguistic</p>

